SIEMENS

SIMATIC PCS 7

SIMATIC PCS 7
Process Control System

Volume 3: Add-ons for SIMATIC PCS 7

Catalog
ST PCS 7 AO

Edition
2018

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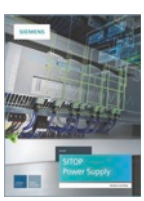

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SIMATIC PCS 7 Process Control System

Vol. 3: Add-ons for the SIMATIC PCS 7 Process Control System

SIMATIC PCS 7

Catalog ST PCS 7 AO · 2018

Supersedes:
Catalog ST PCS 7 AO · 2017

Refer to the Industry Mall for current updates of this catalog:
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and as PDF at the following address:
www.siemens.de/stpcs7ao

The products contained in this catalog can also be found in the Interactive Catalog CA 01.
Article No.: E86060-D4001-A500-D8

Please contact your local Siemens branch.

000656 QM08The products and systems described in this catalog are manufactured/distributed under application of a certified quality management system in accordance with DIN EN ISO 9001 (Certified Registration No. 000656 QM08). The certificate is recognized by all IQNet countries.

Add-ons for SIMATIC PCS 7.

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. Thus the complete process chain at a production location can be automated, and not just the actual production process - from the inbound logistics (material supply), through the primary process and downstream secondary processes (filling, packaging), down to the outbound logistics (storage).

The exceptionally powerful and versatile SIMATIC PCS 7 process control system is an ideal basis for the cost-effective implementation and efficient operation of control systems. Its functionality can be expanded through the seamless integration of technology components for specific automation tasks.

Uniformity, modularity, flexibility, scalability, and the openness of SIMATIC PCS 7 additionally provide optimal prerequisites for integrating supplementary components and solutions into the process control system in an applicative manner and thus extend and round off its functionality.

Since SIMATIC PCS 7 was launched on the market, we at Siemens as well as our external partners have developed a wide range of supplementary components which we refer to in short as PCS 7 add-on products.

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PCS 7 add-on products are software packages and hardware components that are optimally adapted to the respective field of application and thus enable cost-effective use of SIMATIC PCS 7 for special automation tasks.

With this catalog, we wish to help you in finding products for your specific task.

Product responsibility, conditions of use

The responsibility for a PCS 7 add-on product generally rests with the product manager in each case. The address of the product manager can be found in the "Further information" section. This gives you direct access to the appropriate specialists.

All SIMATIC PCS 7 add-on products entitle you to worldwide hotline support from our Technical Support center. Information on central technical support as well as contact addresses can be found in the appendix to this catalog; the general terms and conditions apply.

External SIMATIC PCS 7 partners organize the sale and delivery of their products independently. Their own terms and conditions of business and delivery apply. Corresponding information can be obtained from the addresses given in the "Further information" section. Siemens AG accepts no liability and offers no warranty for the products of external SIMATIC PCS 7 partner companies.

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Pricing information

Pricing information for the products with article numbers in this catalog can be obtained via the interactive catalog CA 01, the Industry Mall on the Internet, or on request from your local Siemens partner.

Pricing information for the products without an article number can be provided on request by the responsible add-on partners listed under "More Information".

Internet

The ST PCS 7 AO catalog can also be downloaded as a PDF file from the Information and Download Center via the Internet: **www.siemens.com/stpcs7ao**

Additional information is available on the SIMATIC PCS 7 web site on the Internet at: **www.siemens.com/simatic-pcs7**

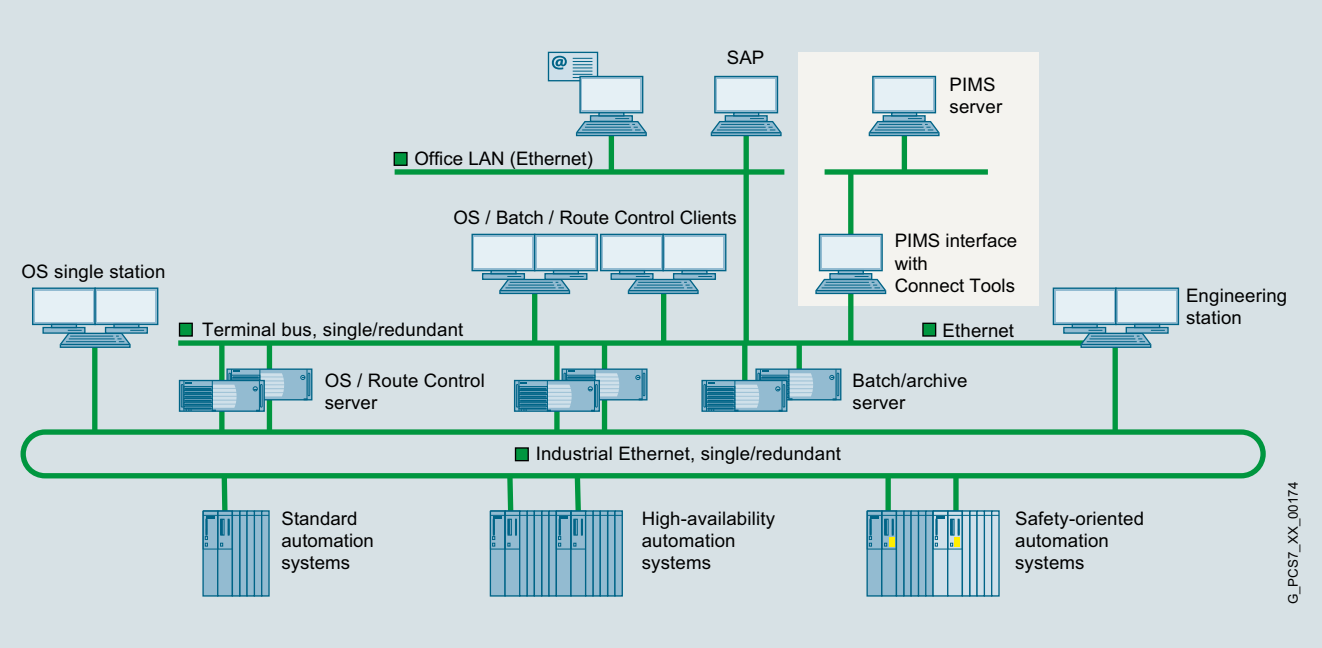
Marking for SIMATIC PCS 7 V8/V9

The add-on products offered in this catalog are specified for SIMATIC PCS 7 versions V8.0, V8.1, V8.2 and V9.0. SIMATIC PCS 7 versions prior to version 7.1 are no longer supported by this catalog.

The possible application is specified for each product. When V8 or V8.x is specified, it refers to all 8 versions. Unless the version is explicitly defined, e.g. V8.2.

Information and management systems

Overview



The products described here (interfaces and tools) support economic cooperation between SIMATIC PCS 7 including SIMATIC BATCH and the following plant information management systems (PIMS):

- PI-System from OSIsoft (PI PCS 7-CONNECT)
- aspenOne from AspenTech (aspenOne PCS 7-CONNECT)

A plant information management system is suitable for:

- Short-term and long-term archiving beyond the limits of companies and plants
- Evaluation and presentation of process and production data

The interfaces and tools provide the best possible combination of PI-System and aspenOne with SIMATIC PCS 7. They feature high flexibility, performance and safety. They also support redundant systems and archive recovery concepts, e.g. in the event of interferences in a connection.

We can additionally offer tailored, scalable support and services for efficient implementation and maintenance of these interfaces and tools. Information on support and services as well as manufacturer declarations are available on request (for contact address, see "Further information").

Function

PI-PCS 7-CONNECT

Interface PI-CONNECT OPC+

PI-CONNECT OPC+ reads the process variables cyclically from SIMATIC PCS 7 and saves these in the PI long-term archive.

The interface is operated on a separate interface PC on the terminal bus of the SIMATIC PCS 7 process control system, and supports:

- Redundancy functionality of the SIMATIC PCS 7 OS server
- Concurrent time stamp treatment
- Archive recovery
- Failover online

The PI-CONNECT OPC+ interface can be used in combination with SIMATIC PCS 7 V8.x and V9.0. It can use the following interfaces for communication with SIMATIC PCS 7:

- OpenPCS 7 interface
- OPC DA and OPC HDA interface (OPC UA in preparation)

Interface PI-CONNECT ALARM

The PI-CONNECT ALARM interface can be used to transfer messages from the SIMATIC PCS 7 process control system and/or other sources to the PI archive. The PI-CONNECT ALARM interface is characterized by the fact that all messages and alarms are detected even in exceptional situations. In addition, various recovery methods are available.

PI-CONNECT interrupt can be used in combination with SIMATIC PCS 7 V8.x and V9.0.

PI-CONNECT SIMATIC BATCH interface

This interface transmits data from SIMATIC BATCH to the PI-Batch subsystem. Together with the PI-CONNECT OPC+ interface, reports and evaluations based on batch data and process data can be implemented in the PI system. Additional features of PI-CONNECT SIMATIC BATCH include:

- Archive recovery
- Support of hierarchical recipes of SIMATIC BATCH

PI-CONNECT SIMATIC BATCH can be used in combination with SIMATIC BATCH V8.x and V9.0.

PI-CONNECT CONFIG tool

PI-CONNECT CONFIG can work together with PI-CONNECT OPC+ as well as with the OPC interface of OSIsoft. The tool provides support for efficient creation and easy updating of the PI system project for the SIMATIC PCS 7 interface. It provides CSV files for import into the PI configuration database. It can be used equally for initial configuration of the PI system as well as for tracking SIMATIC PCS 7 configuration changes in the PI system.

PI-CONNECT CONFIG can be used in combination with SIMATIC PCS 7 V8.x and V9.0.

aspenONE-PCS 7-CONNECT

Batch.21-CONNECT SIMATIC BATCH interface

This interface transmits data from SIMATIC BATCH to the Batch.21 system and supports you with functions such as archive recovery. Thus reports and evaluations based on batch data and process data can be implemented in the AspenTech system.

Batch.21 CONNECT SIMATIC BATCH can be used in combination with SIMATIC BATCH V8.x and V9.0.

Interface IP.21-CONNECT RECOVERY

Servers disconnections when fetching data from OPC DA servers can sometimes lead to gaps. These data gaps are preventable with the IP.21-CONNECT RECOVERY interface. Missing data can be read from the OPC HDA server of the process control system.

The IP.21-CONNECT RECOVERY interface provides two recovery mechanisms:

- Manual recovery with specification of the time period
- Automatic recovery (for closing the data gaps before starting the OPC DA interface)

The IP.21-CONNECT RECOVERY interface is suitable for use with SIMATIC PCS 7 V8.x and V9.0.

IP.21-CONNECT CONFIG tool

IP.21-CONNECT CONFIG provides support for effective creation and easy updating of the IP.21 system project for the SIMATIC PCS 7 link. The tool provides CSV files for importing into the IP.21 configuration database. It can be used equally for initial configuration of the IP.21 system and for tracking SIMATIC PCS 7 configuration changes in the IP.21 system.

IP.21-CONNECT CONFIG can be used in combination with SIMATIC PCS 7 V8.x and V9.0.

More information

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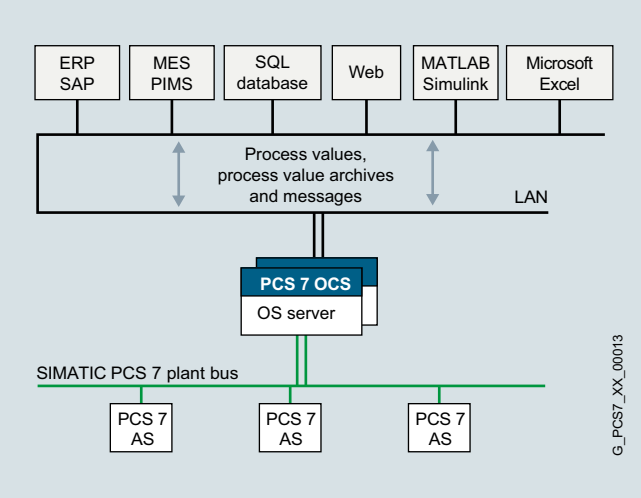
You can find additional information on the Internet at:
www.siemens.de/mis-pcs7

Overview



As an alternative to the OpenPCS 7 system interface, the PCS 7 OCS open data interface can also be used for data communication between external systems on the MES and ERP levels and the SIMATIC PCS 7 process control system.

In contrast to the Open PCS 7 interface based on OPC specifications, the PCS 7 OCS interface uses a platform-independent communication standard (ACPLT/KS), which enables stable, firewall-compatible TCP/IP communication over configurable, fixed network ports.

The server interface PCS 7 OCS offers functions for reading and writing process tags as well as for reading out message archives and the process value archive of the process control system SIMATIC PCS 7. This allows e.g. job, production, or inventory information to be exchanged, visualized, and edited between an ERP system (Enterprise Resource Planning) and SIMATIC PCS 7.

In addition to the process and archive data, structure and type information of the process control system configuration can be read out via the PCS 7 OCS server interface. External applications can therefore be used to systematically search through the process control system SIMATIC PCS 7 according to various criteria (e.g. search all function blocks of type "CTRL_PID" and read the actual value of the manual/automatic parameter "AUT_ON_OP").

Note:

PCS 7 OCS can be used in combination with SIMATIC PCS 7 V7.1, V8.x and V9.0.

Application

Easy integration of external applications/systems to SIMATIC PCS 7, including:

- SAP and other ERP systems from the corporate management level
- MES systems for production management
- PIMS (Plant Information Management Systems) to gather operating data
- Simulation and optimization tools, e.g. for monitoring of controller performance or for application of Advanced Process Control
- Analysis tools for alarm management
- External database applications for long-term archiving and data analysis for more than a single plant
- Web browser for presentation of production information (online data, message lists, trends, dashboards)
- Generation of reports, e.g. with Microsoft Excel
- Data exchange between SIMATIC PCS 7 and process control systems from other manufacturers

Design

PCS 7 OCS is installed directly on the PCS 7 OS server. Neither additional hardware nor any special configuration of the associated OS server is necessary.

Two PCS 7 OCS licenses are required for connecting redundant couplings, one for each OS server of a redundant pair of servers. Identical information is then available redundantly via the two PCS 7 OCS interfaces of this pair of servers.

Powerful PCS 7 OCS communication based on the TCP/IP protocol for data communication between an OS server and external application/system is also possible without problems in distributed networks in which the access is limited by means of a firewall.

Function

- Access to the tag management of an OS server (read and sometimes also write)
- Reading structure and type information
- Reading out process value archives (Tag Logging)
- Reading out the alarm log (Alarm Logging)

Additive standard applications from LeiKon GmbH

LeiKon GmbH offers the following applications for the SIMATIC PCS 7 connection via PCS 7 OCS in addition to the PCS 7 OCS (server interface) (see under "More information" for the contact address for detailed information and ordering):

- **Intexc SUITE**,
  a software platform for operating assistance systems to allow anticipatory and proactive operation in the following application areas:
  - Soft sensors
  - Process prediction
  - Optimized control
  - Online quality control
  - Status-based maintenance
  - Performance indexes
- **Intexc CONNECT**,
  a data coupler between SIMATIC PCS 7 and external applications/systems:
  - SAP systems
  - Process data archives and data bases
- **Intexc AUTO CONFIG**,
  a tool for rule-based query and evaluation of process and configuration data with the following application options:
  - Bulk engineering and continuous consistency adjustment of operating data acquisition systems (PIMS) with the data point configuration of SIMATIC PCS 7
  - Automatically generated reports for monitoring and documentation of plant and process conditions
  - System-independent reverse documentation and validation of SIMATIC PCS 7 configurations for acceptance (SAT, FAT)

Ordering data

	Article No.
SIMATIC PCS 7 OCS V3.3 incl. SP1 Open communications server for data exchange between SIMATIC PCS 7 OS server and third-party system/application, runs with SIMATIC PCS 7 V8.x and V9.0, single license for 1 installation Engineering software with runtime license for one PCS 7 OS server, one language (German), software class B Delivery package: Software and documentation on CD and Certificate of License	**6DL5405-8AD33-0XA0**
Additive applications For data exchange with the SIMATIC PCS 7 OS server via SIMATIC PCS 7 OCS, e.g. Intexc (www.intexc.de)	On request from LeiKon GmbH

More information

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52134 Herzogenrath
Germany

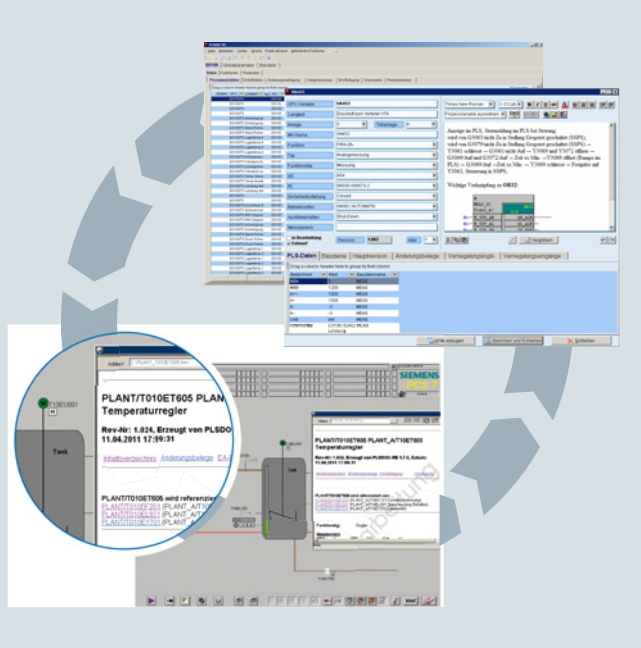
Tel.: +49 2407 95 17 330
Fax: +49 2407 95 17 339

E-mail: contact@leikon.de

Additional information is available on the Internet at:

www.leikon.de

Overview



PLSDOC is a system for documentation, support and project management of industrial plants in the process industry, e.g. chemical, petrochemical, pharmaceutical and wastewater treatment, as well as in manufacturing and the power industry.

PLSDOC enables documentation and revision of process control plants based on the SIMATIC PCS 7 process control system throughout their life cycle. Plant operators benefit from the high availability of system know-how and are excellently supported both in the plant maintenance as well as in quality assurance.

PLSDOC aligns in real-time the plant documentation with the current parameters of the process control system, e.g. limits, control parameters, interlock information, and sequencers. Changes are automatically recorded and revised in change reports.

PLSDOC provides information for system support engineers in standardized form, for example with:

- Description of the process tag functionality
- Limit lists
- Change logs
- SFC (sequencers) re-documentation
- SFC Designer with SFC version comparison
- Project documentation: IB/FAT/LoopCheck logs etc.
- Procedure instructions to support the alarm management
- Automatic configuration / update of long-term archive systems

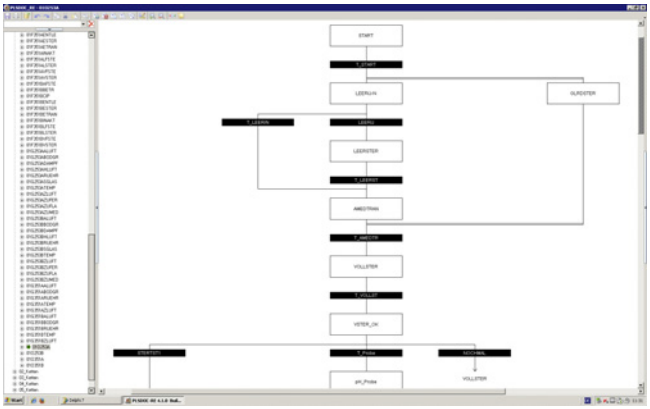
Note:

PLSDOC can be used together with SIMATIC PCS 7 V7.1, V8.0, V8.1 and V8.2.

Benefits

- Securing plant know-how
  - Automatic comparison of data in process control system and feature specification
  - Increased plant security
  - Direct availability of the system documentation
  - Integration of feature specification into the operator systems
  - Fast fault identification
- Support of operation, production and maintenance
  - Efficient help for troubleshooting and training
  - Increased efficiency of the plant personnel
  - Paperless work and quick sourcing of information
  - Efficient documentation / re-documentation of process control
- Standardized CFC and SFC documentation
- Completeness and transparency of change tracking
  - Revision history
  - Ensured timeliness of documentation
- Reduced error sources and avoidance of redundant processing

Function



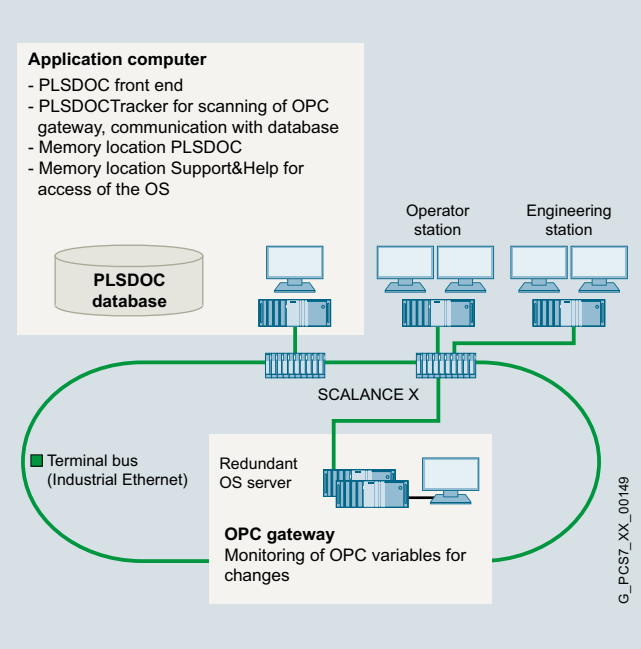
SFC Editor with graphical processing template and HTML output

Functional characteristics

- Online update of plant documentation from the process control system in real-time
- Plant documentation can be integrated in operator stations and made available as HTML documents in process pictures
- Documentation of the plant lifecycle
- SFC editor for sequencer re-documentation with graphical processing template and HTML output
- Requirement and specification function, provides essential operating documents
- Configuration and updating of long-term archiving systems, e.g. Aspentech IP21, OSI-Soft, Plant Historian PDA
- Re-documentation of existing systems
- Management of information on system peripherals (computers, printers, software licenses etc.)

Function (continued)

Technology



System overview of PLSDOC

- Central, database-driven plant documentation
  - Generation of HTML documents for every process variable
  - Referencing of other process variables can be directly called using hyperlinks
- Coupling of SIMATIC PCS 7 and SIMATIC WinCC as well as connection of control systems / controllers of any kind via OPC, e.g. Delta V, Freelance, 800xA
- Special solutions for legacy systems such as TELEPERM M, Contronic P, Advant Master
- Monitoring of redundant pairs of servers during re-documentation and switchover to the redundant server upon failure of the active server
- Buffering the change information prevents data loss due to connection interruptions between OS server and PLSDOC
- Plant-wide application
- Menu-guided installation by the user possible

Technical specifications

System requirements

- Microsoft Windows XP, Windows Vista, Windows 7, Windows 8; 32-bit or 64-bit in each case
- Microsoft Windows Server 2003, 2008, 2008 R2, 2012; 32-bit or 64-bit in each case

Application computer

- 2 GB RAM, 5 GB hard disk

Database computer

- Microsoft SQL Server 2005, 2008, 2008 R2, 2012
- 4 GB RAM, 100 GB hard disk

More information

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84489 Burghausen
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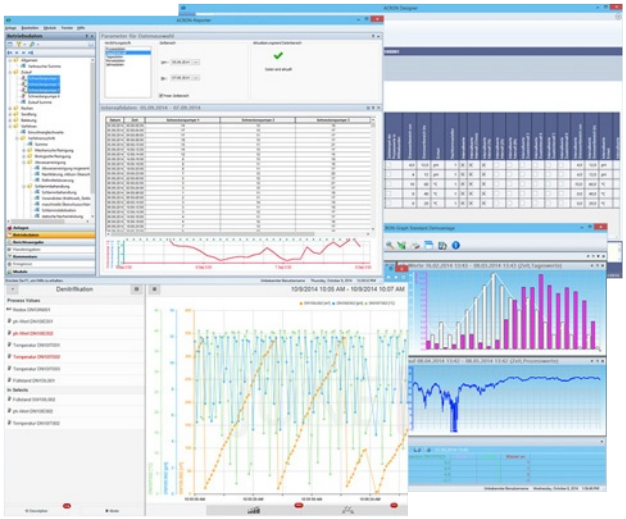
Overview



The ACRON system, based on a rugged, fault-tolerant client-server architecture, is designed for the factory-wide, cross-plant and long-term archiving of operating data as well as its analysis, interpretation and indelible logging. It provides the plant operator with excellent support for plant optimization and energy monitoring (according to DIN ISO 50001) and for the fulfillment of reporting obligations.

Originally designed for the special requirements of environmental engineering, ACRON has since become widely accepted in many other sectors including water & wastewater (DWA-M 260, DWA-A 216), chemicals, pharmaceuticals (21 CFR Part 11 standard of the Food and Drug Administration), food, oil & gas.

ACRON is also suitable for meeting the high requirements encountered in the water/wastewater/environmental industry with regard to acquisition, display, analysis and documentation of operating data, for example, the ATV M260 guideline in Germany.

The current ACRON 8 version offers an exceptional price/performance ratio, and is impressive in operation thanks to high availability, running reliability, and data integrity. Simple configuration, easy handling and high flexibility are further exceptional features.

More information

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28203 Bremen
Germany

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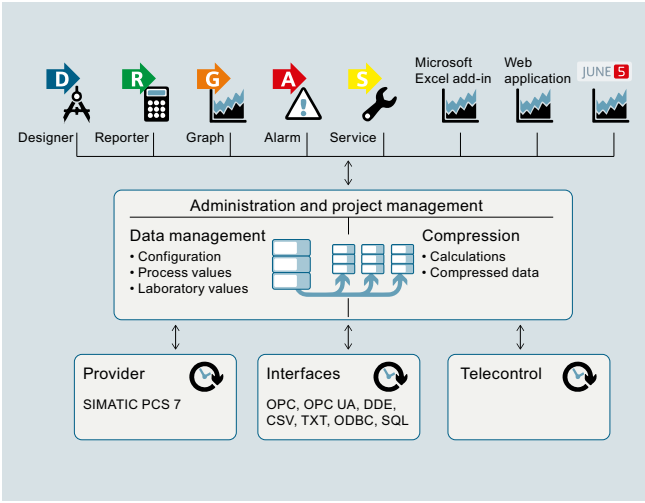
Fax: +49 421 3379561

E-mail: info@acron8.com

You can find additional information on the Internet at:
www.acron8.com

Design



The modular, scalable ACRON 8 can be individually configured to match the size and requirements of the project – as a single-user system, as a networked client-server system or also as a multi-server. It is available in German and English (further implemented languages on request).

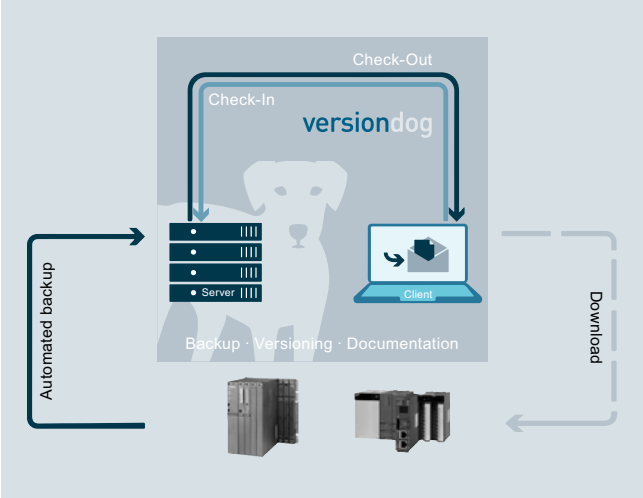
The following modules are components of ACRON 8:

- Database:
  More than 250 000 data points, time-based or change-dependent recording, arithmetic operations, high performance with resolution in the millisecond range, high data security due to TLC (Three Level Cache)
- Provider:
  Data acquisition from any sources with telecontrol link and very high data security (even with interrupted connections) and optional time stamp transfer; data transfer from various measuring instruments
- Reporter:
  Convenient operator interface for printing of reports and logs with input facility for manual laboratory values
- Graph:
  User-friendly presentation and analysis of measured values and statistical values in trends
- Fault and maintenance module:
  Generation of all required fault and message reports as well as comprehensive statistics
- AC Job:
  Administration module for automatic printing of reports including sending by email
- AC mirror:
  Up to 6-fold database redundancy
- JUNE5 as ACRON Web front end

Interfaces tailored to SIMATIC PCS 7 allow seamless integration with the process control system. Some modules can be integrated as OCX in SIMATIC PCS 7. A web application (Pure Web) and a Microsoft Excel add-in are also available.

Extensive graphs and reports can be displayed on any hardware platform with common browsers using JUNE5 as a pure web front-end without plug-ins. The web application can be operated as a portal or in the private cloud, has its own login, is multi-client capable and supports simultaneous access to multiple ACRON applications. A direct connection to SIMATIC PCS 7 is available. Manual value input is implemented.

Overview



Data management of a SIMATIC PCS 7 plant with versiondog

Siemens Solution Partner AUVESY GmbH & Co. KG (**AU**tomated **VE**rsioning **SY**stems) offers "versiondog", a high-performance software and data management system, which can be seamlessly integrated in to any SIMATIC PCS 7 architecture as a SIMATIC PCS 7 add-on product.

versiondog ensures data transparency and project security, helps to avoid risks and reduce overhead. It meets the requirements for information security of aspects such as data confidentiality, data integrity, data availability and data authenticity.

The operator of a SIMATIC PCS 7 plant can versiondog to develop strategy for data management and thus operate more efficiently and far-sighted. With a cyclic backup, there is a check to determine whether the SIMATIC PCS 7 project currently being used corresponds to the validated software version. Cyber attacks can also be identified by comparing online and offline data.

Since failures of a plant usually cannot be predicted, versiondog keeps a fresh backup of SIMATIC PCS 7 project as a backup strategy in case of trouble (Disaster Recovery). This data backup is continually updated and versioned, i.e. the previous version is replaced by a new version after changes (adaptations or improvements) are made.

Audits of SIMATIC PCS 7 systems and associated automation components are optimally supported by the version control and change documentation from versiondog (reports and automatic audit trail included). SFC and CFC standard library management provides a reference for SFCs/CFCs and blocks originating from libraries.

Note:

The software and data management system, versiondog, can be used in combination with SIMATIC PCS 7 V8.0, V8.1 and V8.2.

Application

The SIMATIC PCS 7 add-on, versiondog, can be used by the operator of a SIMATIC PCS 7 plant for the following tasks:

- Performing all data backups and managing software versions throughout the entire lifecycle of the SIMATIC PCS 7 plant
- Cyclical check of the validated version through automatic data backup and comparison of the saved version to the most recently released, stored version
- Mapping of the entire configuration of a SIMATIC PCS 7 system including the change history from commissioning to the current time of the plant operation
- Comparison of the SFCs and CFCs of two versions of a SIMATIC PCS 7 project using "SmartCompare" (all differences are highlighted in color and can be selected)
- Complete documentation of changes in a SIMATIC PCS 7 project, for example, audits, validations and certifications
- Version control of the software for immediate recovery in case of problems (disaster recovery)
- Restoration of optimized software versions

Design

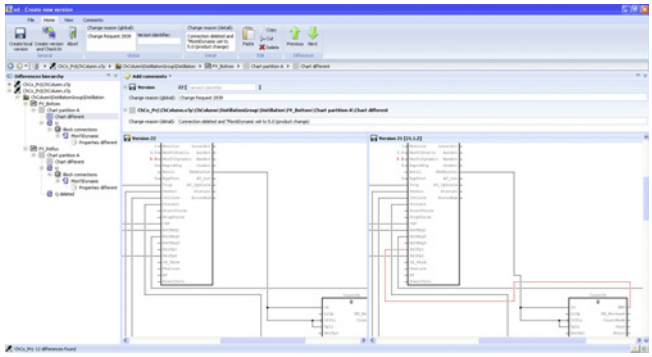
The versiondog software and data management system is based on a client-server architecture. As client-server system, versiondog can be installed in the network of a SIMATIC PCS 7 plant on a dedicated server or directly on a SIMATIC PCS 7 engineering station (ES). Alternatively, the client can operate alone on the engineering station (no server connection and no check-in/check-out).

The client, which can also be run without installation (or rights management), does not carry out any write operations on Windows directories or read/write operations on the Windows registry. System administration is thus possible from any PC-based station. Warranty claims against system suppliers are not voided.

Therefore, versiondog can also very easy integrated in a SIMATIC PCS 7 plant without additional drivers and special setting or configuration in the SIMATIC PCS 7 project.

1

Function



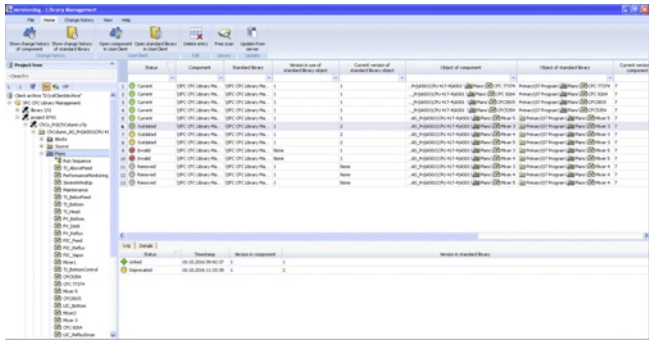
Data comparing two versions of a SIMATIC PCS 7 project using Smart-Compare from versiondog

Data management functions

- Central data storage
  Server-based data storage with clear SIMATIC PCS 7 project structure, user and access management as well as protection against inadvertent overwriting
- Version management with audit trail of versiondog:
  Version management and documentation with logging of all changes as proof of WHO, WHEN, WHAT and WHY; visualization of changes by means of comparative graphic display for CFC/SFC blocks and charts
- SIMATIC PCS 7 SmartCompare:
  Comparator and synchronization modules for alignment of different project versions with clear representation of differences (as graphics, table or text)
- Automatic data saving
  Cyclic, automatic data saving of engineering stations, automation systems and operator stations
- Synchronization with server version
  Guaranteed use of the most recent version saved on the server in the plant

Functions of library management

- Reference for built and used SFCs/CFCs and blocks, available as a standalone client and as a report
- Automatic check for actuality in the current project
  - Green: Project and library are the same
  - Yellow: Library is newer than project
  - Red: Project does not correspond to any version of the library
- Alarm function for unauthorized modification of standard charts



Library management for SIMATIC PCS 7 projects with versiondog

Cyber security functions

- Cyclic, automatic verification that the released version actually controls the production unchanged:
  - Several times daily
  - With alarm indication
  - For textual and/or graphic representation of the differences when there are discrepancies
  - For nearly all components of the automation system
- Assurance that version levels cannot be changed. (Versions cannot be manipulated)
- Restoring a version without "contamination"
- Check for the authorization of versioning in connection with an RMS (Requirement Management System); versioning is possible for fulfillment of the RMS requirement profile
- Monitoring of the system configuration of Windows and Linux-based systems

More information

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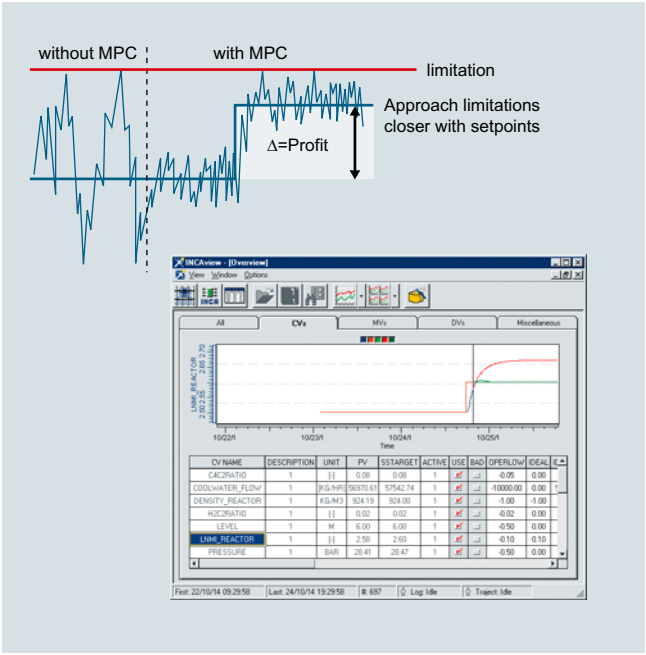
You can find additional information on the Internet at:
www.versiondog.de

Advanced Process Control

2

Overview



Multi-variable controller with integrated optimization procedure

Common control concepts in the process industry today are still almost exclusively based on PID controllers and also include manual intervention by the plant operator. In processes with complex dynamics, linked process variables or limitations, PID controllers reach their limit.

Additional weak spots are product or load changes which are generally carried out partly or completely by the plant operator. This causes variations which prevent optimum quality being maintained at all times.

However, if a process is to be operated close to the capacity limit, while at the same time minimizing waste and assuring the required quality, consideration of these precise boundary conditions in the controller strategy is absolutely essential.

By carefully applying advanced modern control procedures (Advanced Process Control, APC), the process industry has real leverage available for reducing costs and increasing quality. Advanced Process Control establishes process optimization as a link between the planning and scheduling functions of the execution level as well as the process control functions of the control level.

Of all the modern control procedures, Model Predictive Control (MPC) has emerged as the most suitable approach in numerous applications. MPC simplifies the handling of complex plant dynamics, permits the early elimination of faults, takes into consideration the plant limitations, and allows complex process control strategies.

INCA MPC

This procedure is also used by INCA MPC, a multi-variable controller of the latest generation. INCA MPC differs from classic MPC controllers due to a series of functional extensions. Modern modeling methods, automatic step test and modeling methods, bumpless switching between different models (multi-model handling), expansions for batch process optimization, non-linear predictions, and a high quality of control are setting new standards and enable the control of non-linear processes as well as plant-wide optimization.

A web-based INCA MPC significantly reduces the time required for implementation and can handle stricter IT security rules. An autotest function is also available. This allows more hands-off MIMO step tests taking in account the process conditions.

INCA MPC software itself runs on a separate PC/server with Windows 7/8/10 or Windows Server 2012/2016 operating systems.

Note:

INCA MPC can be used in combination with SIMATIC PCS 7 V8.x and V9.0. As of SIMATIC PCS 7 V8.2, INCA MPC or INCA Sensor can be integrated via the Advanced Process Control (APC) coupling modules of the SIMATIC PCS 7 Industry Library (as of V8.2 Update 1).

Application

Application examples of INCA MPC

- Ammonia, urea, nitric acid, granulates, and phosphoric acid plants
  - Increase in throughput, for example, by up to 2% for ammonia and up to 5% for urea
  - Increase in steam export by up to 1% (ammonia)
  - Reduction in specific energy consumption by up to 2%
  - Increased plant availability
  - Lower sensitivity to changes in condition of supplied gas (ammonia)
- Distillation towers
  - Operation closer to the concentration restrictions
  - Reduction of steam consumption
  - Operation within a performance range of large bandwidth (from technical minimum up to full-load)
- Specific solutions for the glass industry based on INCA MPC technology, e.g. custom-designed solutions for melting tanks, glass channels and glass tubes
- Batch plants (non-linear version of INCA MPC)
  - Proven reduction in response time (dead time) by up to 20%

More information

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For further information, visit:
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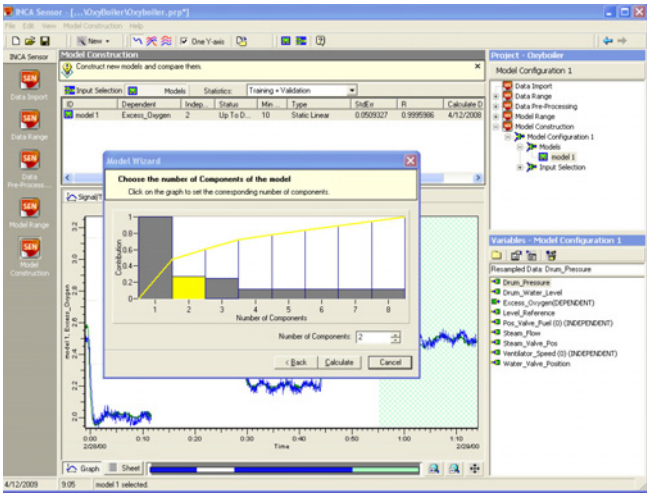
Overview



Online determination of quality variables

Production plants in the process industry today rely on regular and extremely time-consuming laboratory analyses for quality control purposes (new measured values typically every 8 to 24 hours). Or they use very expensive and high-maintenance online analyzers (new values typically every 20 to 60 minutes). In order to raise productivity and run the process up to its full capacity while maintaining the required quality, it is necessary to measure product quality online with a refresh rate of between 0.5 and 3 minutes. This ensures that the controller responds at the right time and the product specifications are maintained.

The plant operator is usually responsible for complete or partial process control. Weak points in process control are also reflected by changes in product quality or in the utilization of production capacity. Since no quality values are known during a conversion, the production specifications do not correspond to the quality requirements over longer periods.

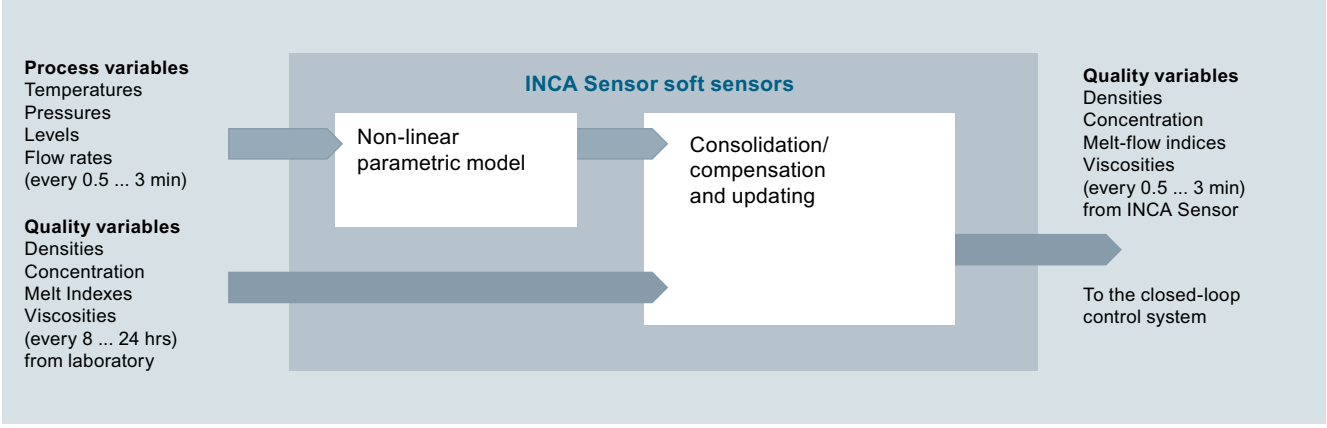
These problems can be solved by using soft sensors. Soft sensors are calculation procedures which determine non-measurable quality variables on the basis of measurable process values (pressures, flow rates, temperatures, levels, etc.) in cycles of between 0.5 and 3 minutes. The calculation is made on the basis of a (non-)linear parametric model generated from historic plant data or through dedicated tests. The high-speed soft sensor predictions can be consolidated by laboratory analyses or values from online analyzers.

The soft sensor predictions enable the frequency of laboratory analyses and the use of online analyzers to be reduced. They raise product quality while at the same time reducing operating costs.

INCA Sensor is a tool for designing, parameterizing and operating soft sensors. It makes it easier to master complex plant dynamics, and enables operating conditions to be optimized so that the quality of the end product is assured.

Note:

INCA Sensor can be used in combination with SIMATIC PCS 7 V8.X and V9.0. As of SIMATIC PCS 7 V8.2, INCA MPC or INCA Sensor can be integrated via the Advanced Process Control (APC) coupling modules of the SIMATIC PCS 7 Industry Library (as of V8.2 Update 1).



Application

Application examples

- Polymer thickness
- Polymer melt-flow index
- Viscosity
- Product concentration at the outlet of reaction or distillation columns
- Plant efficiency/utilization factor
- Cement properties
- Exhaust parameters of combustion processes
- Gas concentrations (NO_x, CO_2, etc.)

INCA Sensor sets new standards for the permanent plant-wide optimization and control of non-linear processes. INCA Sensor differs from other soft-sensor program packages due to its series of function expansions that support the designer when drafting reliable soft sensors:

- Modern modeling methods such as linear transmission functions, general non-linear models (GNOMOs) or estimates according to the partial least squares estimators method
- Signal processing or pre-processing (offline and online)
- Powerful tools for selecting suitable input variables
- Input options for data from laboratories and analyzers

Soft sensors are a prerequisite for plant optimization and quality control using advanced process control solutions such as INCA MPC.

The INCA Sensor program package can run on a separate PC/server with Windows 7/8/10 or Windows Server 2012/2016 operating systems. It is linked to the SIMATIC PCS 7 process control system by means of OPC, where INCA Sensor is operated as an OPC client.

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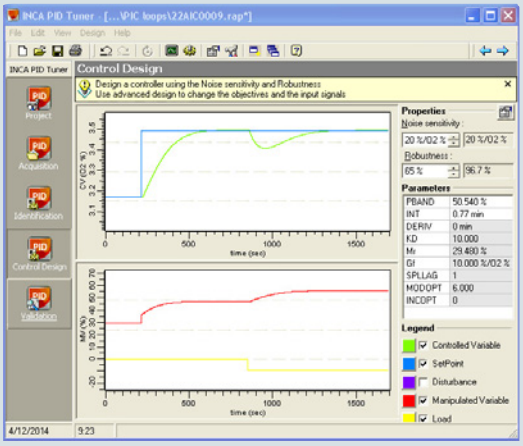
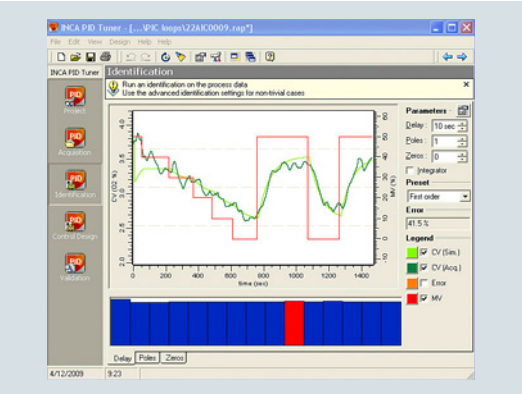
Overview





The PCS 7 PID Tuner integrated in the CFC enables you to determine the optimum controller parameters in predefined steps for PID, PI and P controls in a control loop.

The PCS 7 PID Tuner can be used for the software controllers CTRL_PID and CTRL_S. The INCA PID Tuner program package, on the other hand, is a controller-independent and manufacturer-independent tool for fast and user-friendly, computer-aided optimization of complex PID controllers. The INCA PID Tuner software itself runs on a separate PC/server with Windows 7/8/10 or Windows Server 2012/2016 operating systems. It is linked to the SIMATIC PCS 7 process control system by means of OPC.

As an alternative to online data, files containing data collected earlier can also be evaluated offline. The program package is able to process the following file formats:

- Microsoft Access
- Microsoft Excel
- MATLAB
- INCATest
- All types of ASCII files

INCA PID Tuner contains predefined PID controller structures for PID controller types from SIMATIC PCS 7 and other manufacturers. With the aid of a dynamic process model, the user can determine the optimum controller setting step by step.

Note:

INCA PID Tuner can be used in combination with SIMATIC PCS 7 V8.X and V9.0.

Function

INCA PID Tuner differs from other controller optimization software through:

- Optimization of PID control loops on the basis of engineering specifications
- Controller setting for optimum compensation of disturbances
- Controller setting for optimum command behavior with predefined setpoint changes

Data acquisition

Collection of process data by means of an online OPC connection to the SIMATIC PCS 7 operator system or from offline files. Many test signals are available for initiating the process, including:

- Setpoint step-change
- Manipulated variable step-change
- Ramps
- Pseudo-disturbance binary signals

Data preprocessing

The user can select and filter data to refine the results of the process identification.

System identification

A dynamic process model is defined on the basis of the collected process data. Various model structures can be used: with/without dead time and different system arrangements. Users have the option of influencing the system identification on the basis of their knowledge about the process. They can save and compare the resulting process models.

Controller design

On the basis of the chosen process model, controller parameters are determined for a certain specification. Consequently, the controller can be designed for optimum command behavior, optimum noise suppression or a combination of both.

Simulation of the designed controller

An evaluation of the control loop behavior is possible by simulation within INCA PID Tuner or online via the existing OPC connection. The simulation results obtained with different controller settings can be saved and compared.

Good settings for primary control loops are a prerequisite for subsequent plant optimization, for example, using INCA MPC.

More information

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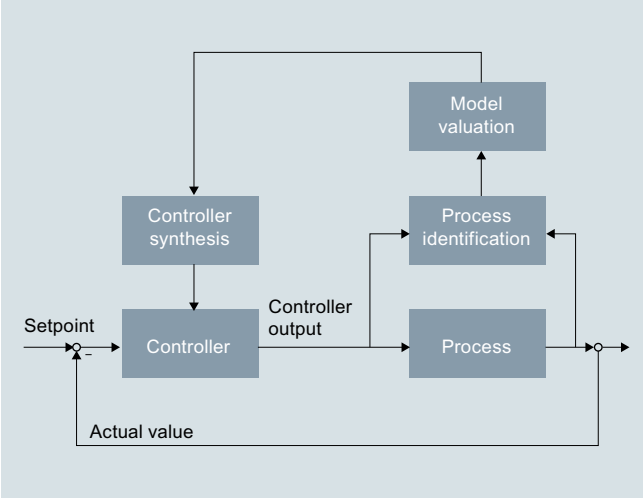


Conventional PID controllers are frequently used in manual mode in practice because the control quality achieved does not match the expectations. This is because either the controllers have been poorly set or because the processes are difficult to master using PID controllers, for example,

- Temperature processes
- Processes with a high percentage of dead time
- Processes which change depending on time or operating point

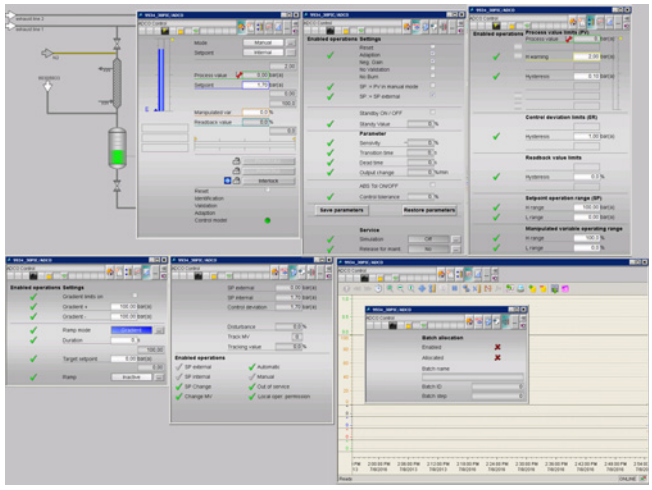
The optimum setting of PID controllers additionally requires special experience and is very time-consuming.

A recommendable alternative for solving such problems is the adaptive controller ADCO. It works on the basis of a process model which is determined in the background during the adjustment process. Using this process model, ADCO can predict the result of a process intervention (predictive controller), for example, how the opening of a steam valve by a certain amount will affect the process temperature. In the opposite direction, it is also able to determine the valve position required to achieve or retain a defined temperature value. ADCO with the process model has more process information available than conventional controllers, and uses this to improve the control quality.

ADCO is also available as a multi-range controller (ADMR) up to SIMATIC PCS 7 V8.0. The special feature of this version is that is the control range can be divided into a maximum of 8 zones which can be individually optimized. Switching over between the zones can be carried out by the user or is event-dependent.

Note:

The ADCO adaptive controller can be used in combination with SIMATIC PCS 7 V8.0, V8.1 and V8.2.



Combination of single views from ADCO

Benefits

Compared to the conventional PID controller, the adaptive controller ADCO is the better alternative, especially for processes that are difficult to control. This has the following advantages:

- About 10 to 20% time savings in the commissioning phase due to the fast and rugged controller setting
- Significantly better control quality for difficult processes
- Very good adaptability, especially where there are changes to the process characteristics
- Significant reductions in transmission times for status transitions in batch processes (e.g. heating a product from temperature level A to level B)

Technical specifications

ADCO	
Hardware requirements	SIMATIC PCS 7 V5.x or higher with AS 41x automation systems
Memory requirement	28 KB (once only) + 5 KB (per controller)
Computing time	Approx. 2 ms (S7-416)

More information

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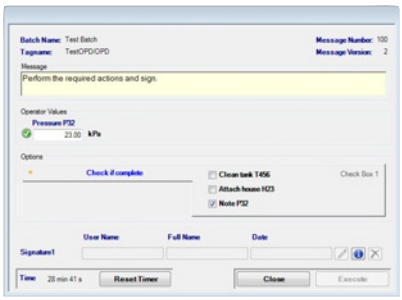
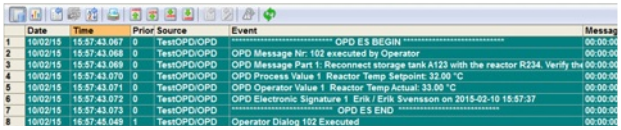
Operator control and monitoring

Overview





The software operator dialog (OPD) simplifies the interaction between operating personnel and process control system. As a powerful operator tool, it facilitates control of the process and provides complete proof of all manual operations, which is essential for a validated batch system.

The OPD software, which can be executed in a SIMATIC PCS 7 / SIMATIC BATCH system environment, is based on the Microsoft SQL server software. It uses the SIMATIC logon for user verification and electronic signatures. It therefore complies with the validation requirements according to 21 CFR Part 11 and other statutory directives. As a result of the flexible design, the OPD functionality can easily be adapted to any SIMATIC PCS 7 project.

Note:

OPD can be used in combination with SIMATIC PCS 7 V8.x and V9.0.

Function

Application

Operator interaction in an SFC phase

An OPD can be used in an SFC phase. The simplest interaction is a request to the operator to confirm an OPD message before progressing to the next step of the phase. A second application example is a request to the operator to select one of two storage tanks. Electronic signatures may be necessary in both cases.

Operator interaction between two SFC phases

At the batch level, OPD can also be used for operator interaction between two separate SFC phases. For example, the operator can be requested to select between different technical equipment which require separate subsystem assignments.

Operator interaction for event-based actions

OPD can also be used for event-based actions. An example is the request to an operator to acknowledge an OPD message before opening a valve or closing a pump.

Audit Trail

The entire operator interaction is stored in the form of WinCC messages and can be easily incorporated into SIMATIC BATCH standard reports. In addition, they can be transferred to any MES system that supports long-term archiving of SIMATIC PCS 7 process data.

Operator dialogs

Operator dialogs are configured using the user-friendly OPDEdit engineering tool. The dialogs are automatically versioned. OPDEdit provides a complete revision log of all modifications.

Each OPD message can have the following content:

- 1 text message
- 0 to 10 process values (string or real)
- 0 to 10 operator inputs (string or real)
- 0 to 3 option groups with up to 6 option boxes
- 0 to 3 control groups with up to 6 control boxes
- 0 to 5 electronic signatures

Further features

- Redundant database server
- Multi-client capability
- Secure identifier (SID)
- Support of SIMATIC PCS 7 Web functionality
- Language support based on Unicode

More information

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You can find additional information on the Internet at:
www.pcs7opd.com

Overview

The ability to quickly and reliably signal fault conditions to the responsible persons is becoming increasingly important in modern control systems.

The modular alarm management system, Alarm Control Center (ACC), accomplishes this task by sending SIMATIC PCS 7 error messages fully automatically to a variety of possible recipients in a variety of ways:

- Android smart phones with ACC-App via SMS, Internet And WLAN
- iPhones with ACC app via Internet
- SMS on cell phones
- Text messages to Ascom and Funktel pagers
- Voice output on telephones via ISDN and VoIP
- Text messages and voice output on HiPath/Hicom/ OpenScape telephones
- email to suitable receivers

Note:

The Alarm Control Center can be used in combination with SIMATIC PCS 7 V8.x and V9.0.

More information

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Support: support@alarmcontrolcenter.de

Additional information is available on the Internet at:

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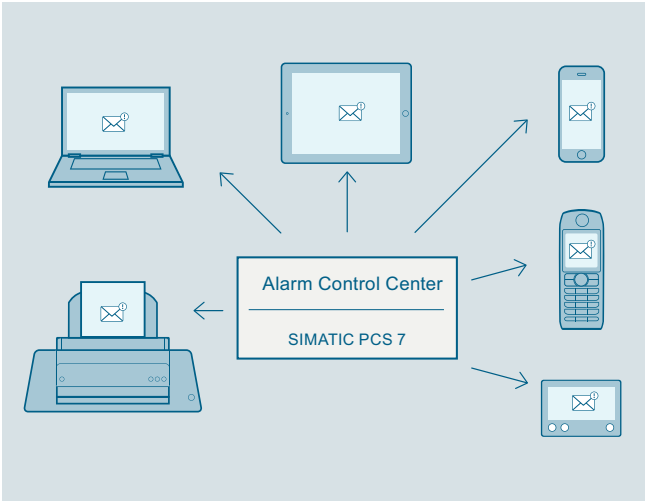
www.alarm-it-factory.de

Function



Important features

- Integrated shift and personnel management for time-dependent delivery of messages to different persons
- Comprehensive escalation system for reliable delivery of messages even if individual receivers cannot be reached
- Operation and configuration throughout the network thanks to Web capability
- Integration of operation and configuration in SIMATIC PCS 7 process pictures using the ACC control for SIMATIC PCS 7 for the control room personnel

Options

Options enable individual adaptation to an operator's specific requirements – ranging from integration into a single SIMATIC PCS 7 station through to the implementation of company-wide fail-safe communication solution:

- Redundancy for fault-tolerant systems
- Alarm filter for suppressing message bursts, follow-on messages, and chatter messages
- System monitoring for monitoring alerting functions by means of cyclic hardware and software component testing
- Logging of changes to the configuration such as deletion of a telephone number or reorganizing the call sequence
- Dialog module option for integrating customer-specific functions such as a quantity query
- Teleconferencing for up to 30 participants
- Forwarding of an emergency call to up to 10 participants
- Personnel monitoring for safeguarding personnel who work alone in hazardous areas
- Alerting additional staff and emergency personnel using the Man Alone option in the ACC app

Overview

Apart from the type and scope of the presentation of information, the architecture of the control center is a major criterion influencing the decision of the control system customer. The full specification of a control center includes recommendations relating to screen, image encoder technology, installation, lighting, air conditioning and software.

As a reliable partner for the user-friendly configuration of control centers with large-screen systems, Barco Control Rooms pays particular attention to the balance between functional, ergonomic and economic aspects.

Control rooms with large-screen systems based on back-projection and LCD systems from Barco Control Rooms are ergonomic and functional. They provide an exceptional working atmosphere, and impressively represent the plant within the company and toward customers and visitors.

Note:

Large-screen systems from Barco Control Rooms can be used in combination with SIMATIC PCS 7 V8.X, V9.0.

Function

The many years of experience of Barco Control Rooms in the development of back-projection and LCD systems is reflected in the comprehensive range of products based on state-of-the-art technologies. The range includes the following standard products:

System	Screen diagonal	Technical specifications
OverView LED series (4:3)		
OVL-508, 708, 808 OVL-515, 715, 815	50", 70", 80"	Single-chip DLP with LED Type x08 = resolution XGA (1024 × 768 pixels) Type x15 = resolution SXGA+ (1400 x 1050 pixels) 16.7 million colors, LED lighting, automatic brightness and color adjustment Digital interface (DVI-D) and web-based service interface
OverView LED series (16:9)		
OL-521, 721 OL-510, 710 OLF-510, 521, 710, 721	50", 70"	Single-chip DLP with LED Type x21 = Full HD resolution (1920 × 1080 pixels) Type x10 = HD Ready resolution (1360 × 768 pixels) 16.7 million colors, LED lighting, automatic brightness and color adjustment Digital interface (DVI-D) and web-based service interface OLF: Front access, small space requirements
MVL-721	70"	
ODL-721; ODLF-721	70"	Single-chip DLP with LASER Full HD resolution (1920 × 1080 pixels),16.7 million colors, RGB LASER lighting, automatic brightness and color adjustment Digital interface (DVI-D) and web-based service interface ODLF: Front access, small space requirements
LCD video walls		
IVD-5521, KVD-5521	55"	LCD display, nearly seamless (3.5 mm), direct LED backlight Full HD resolution (1920 × 1080 pixels), automatic brightness and color adjustment SenseX, 2 × DVI, 1 × DisplayPort in/out, external power supply (optional) IVD: Brightness 700 cd/m^2 KVD: Brightness 500 cd/m^2
OpSpace		
OpSpace – the high resolution pixel image		OpSpace is a workplace solution for operating personnel. It offers a single, adjustable and real-time view of required information via simple access to various applications, remote desktops and video streams. Signals from all sources – including from different networks – are amalgamated and displayed in a 'pixel image', i.e. a single, coherent, high-resolution display area. Each individual signal can be freely moved, expanded or reduced within this display area. Via a single operating channel (mouse/keyboard/audio), the operator has seamless access to all sources.

More information (continued)

All large-screen systems have a modular structure. Several screens can be combined into a panel of any size. The panel is thus a large monitor on which graphic objects and information can be displayed and moved beyond the limits of the individual screens.

The image sources offer exceptional brightness and contrast values as well as sharp and distortion-free pictures. The automatic brightness and color adjustment of all modules of a LED big screen using Sense[6] technology guarantees a uniform and ergonomic image quality.

All back-projection and LCD systems have standardized interfaces for the display of computer applications, video and monitor signals. They can be connected directly to the SIMATIC PCS 7 operator stations without any additional configuration (plug & play).

The back-projection and LCD systems from Barco Control Rooms are optimized for low-maintenance 24/7 operation. For example, the O(V)L series can operate for 5 years without maintenance.

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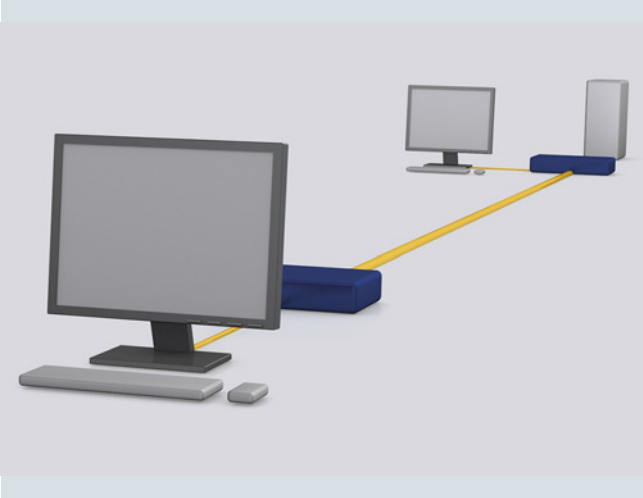
Additional information on the Internet

See:
www.barco.com

Overview



Using the **K**eyboard **V**ideo **M**ouse extenders from Guntermann & Drunck GmbH, you can extend the operating channel of the SIMATIC PCS 7 Industrial Workstation. It is then possible to spatially separate the display and operation components from the computer, and position operator stations up to 10 000 m away from the computer. KVM extenders provide signal transmission in real-time and without loss of performance occurs.

The KVM extenders transfer the following computer signals:

- Video (single or multiple)
- Keyboard, mouse (PS/2 and USB)
- USB 2.0/USB 1.1 (optional)
- Audio (optional)
- RS 232 (optional)
- Remote power (optional)

You can select the following product versions depending on requirements (further differences can be found under "Technical specifications"):

Product version	Transmission of				Max. distance
	VGA	DVI single link	DVI dual link	DisplayPort	
DVI Vision CAT/fiber		●			140 m (CAT) or 10 000 m (fiber)
CATVision	●				300 m
LwLVision	●	●			10 000 m
DL-Vision			●		10 000 m
DP-Vision				●	140 m (CAT) or 10 000 m (fiber)
DP1.2-Vision				●	140 m (CAT) or 10 000 m (fiber)
DP1.2-VisionXG				●	10 000 m (fiber)

Note:

All KVM extenders can be used in combination with SIMATIC PCS 7 V8.x and V9.0.

Application

With the aid of the KVM extenders, the operating personnel can operate and monitor the process from the control room, while the computers are located in a secure and air-conditioned technology room separate from the operator panels. Thanks to the separate installation of the computers, maintenance work by the IT administrators can be carried out centrally in the technology room. Another advantage: The work carried out by operators in the control room is not interfered with or interrupted by servicing.

Concentrated working is thus possible without fan noise or the dissipated heat of computers.

Design

KVM Extender DP1.2-Vision, transmitter (bottom) and receiver (top)

The KVM extenders DVI-Vision-CAT/Fiber, CATVision, DP-Vision, DP1.2-Vision and DP1.2-VisionXG each consist of a transmitter and a receiver in desktop or 19" design which are connected to one another by means of a CAT cable (5/6/7) or a fiber-optic cable. They are independent of the system platform and the operating system. An operator station can be set up at both the transmitter and receiver (local console for maintenance directly on the computer).

DP1.2-VisionXGs have a redundant power supply. The other KVM extenders are also optionally available with a redundant power supply. If a power supply fails, the redundant supply unit immediately takes over. The connection to the computer is thus retained without interruption.

The standard interfaces are used for the computer connection. Neither software settings nor computer adjustments are necessary.

DP1.2-Vision, DP-Vision and DVI-Vision have one network connection, DP1.2-VisionXG has two network connections for web interface and monitoring function. This enables both simple configuration as well as monitoring and reporting of monitoring values via the web interface.

The KVM Extender DP1.2-VisionXG and DP1.2-Vision, DVI-Vision-CAT/-Fiber and DP-Vision feature a screen freeze function. If a monitor loses the video signal or if there is a problem with the graphic controller of the remote computer, the screen freeze function freezes the last displayed image.

Design (continued)

All KVM Extenders support multi-channel operation with 2 or up to 4 video signals. Depending on the multi-monitor graphic cards of the computer and the selected KVM extender, it is possible to implement multi-monitor operator stations with up to 4 screens each.

By means of a KVM switch, local maintenance by an administrator can be centralized in the control room.

KVM Extender DP1.2-VisionXG,
transmitter (top) and receiver (bottom)

Technical specifications

Specification	DVI Vision CAT or fiber	CATVision	DP-Vision	DP1.2-Vision	DP1.2-VisionXG
Local operator station (console)	Yes	Yes	Yes	Yes	Yes
Maximum transmission distance in m	CAT: 140 Fiber: 10 000 m via single-mode fibers, 400 m via multi-mode fibers	300	CAT: 140 Fiber: 10 000 m via single-mode fibers, 400 m via multi-mode fibers	CAT: 140 Fiber: 10 000 m via single-mode fibers, 400 m via multi-mode fibers	10 000 m via single-mode fibers, 400 m via multi-mode fibers
Transmission medium	Cable CAT5e and higher / fiber	CAT5, CAT6, CAT7 cable	Cable CAT5e and higher / fiber	Cable CAT5e and higher / fiber	Fiber: Multi-mode/single-mode fibers
Signals always possible for transmission	Keyboard, video, mouse, RS 232, audio	Keyboard, video, mouse	Keyboard, video, mouse, RS 232, audio	Keyboard, video, mouse, RS 232, audio	
Additional signals which can be transmitted (optional)	transp. USB 2.0 and USB HID Generic	RS 232, audio, USB 2.0	USB 2.0	USB 2.0	
Keyboard/ mouse format	PS/2 and USB (also mixed mode)	PS/2 and USB (also mixed mode)	PS/2 and USB (also mixed mode)	PS/2 and USB (also mixed mode)	
Video					
• Input	Digital (single link)	Analog	Digital (single link)	Digital (DisplayPort DP1.2)	Digital (DisplayPort DP1.2)
• Output	Analog or digital	Analog	Analog or digital	Digital	Digital
• Maximum resolution (every resolution within this bandwidth is supported)	1920 × 1200 at 60 Hz	1920 × 1440 at 75 Hz (depending on distance)	1920 × 1200 at 60 Hz	Per video channel: 4096 × 2160 at 60 Hz	Per video channel: 4096 × 2160 at 60 Hz 2 video channels: 4096 × 2160 at 120 Hz 4 video channels: 8192 × 4320 at 60 Hz (8K at 60 Hz)
• Number of channels	Up to 4	Up to 4	Up to 4	Up to 4 (in preparation)	Up to 4
Expandability	With KVM switch and matrix	With KVM switch	With KVM switch and matrix	With KVM switch and matrix	With KVM switch

Note:

Depending on the cable medium and video signal used, the systems feature automatic image optimization mechanisms.

More information

Guntermann & Drunck GmbH
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Obere Leimbach 9
57074 Siegen
Germany

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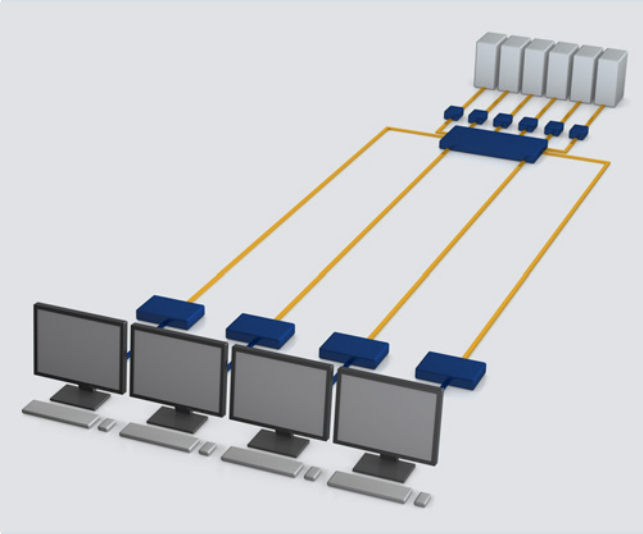
Fax: +49 271 23872-120

Email: sales@gdsys.de

You can find more information on the Internet at:
www.gdsys.de/

Overview



Using the KVM matrix systems, you can access **n** servers of a system from **m** different operator stations locally and/or remotely. Remote access can be accomplished in various ways, over:

- CAT cable, 1:1 (distances up to 300 m)
- Fiber-optic cable (distances up to 10 km), for maximum performance and availability
- LAN (Local Area Network) or WAN (Wide Area Network) "over IP" for access from any location

The product range offered is classified as follows depending on the video signal:

- Digital KVM matrix systems
  - ControlCenter-Compact with fixed configuration levels of 112, 80, 64, 48, 32, 16 or 8 dynamic ports (DP), can be configured as desired as operator station connection or server connection
  - ControlCenter-Digital, with 288, 160 or 80 dynamic ports (DP), can be configured as desired as operator station connection or server connection
- Analog KVM matrix systems
  - CATCenter NEO 4/32, 8/32 or 16/64 (operator stations/servers)
  - CompactCenter X2: 2/16 (operator stations/servers)

You can find the technical specifications of these products under "Technical specifications".

The CATCenter NEO and CompactCenter X2 KVM matrix systems communicate via CAT cables (types 5, 6, 7). When using the modular ControlCenter-Digital and the ControlCenter-Compact, communication between operator station and server can be performed via CAT cables or fiber-optic cables (uniform or mixed).

Digital KVM matrix systems

The ControlCenter-Compact (CCC) and ControlCenter-Digital (CCD) KVM matrix systems operate the following signals:

- Video (DVI, DisplayPort, HDMI or VGA)
- Keyboard and mouse (USB and PS/2)
- Audio bidirectional
- RS 232 and USB 2.0
- CCD, also additional signals from third-party devices e.g. USB 3.0 or SDI

A functional system comprises at least the following elements:

- 1 × central unit (ControlCenter-Compact) or central unit + I/O cards (ControlCenter-Digital)
- 1 × server module (e.g. DVI-CPU)
- 1 × operator station unit (e.g. DVI-CON)
- 1 × transmission cable (CAT or fiber-optic cable) per port

The operator stations for ControlCenter-Compact and ControlCenter-Digital are connected via operator station units such as DVI-CON (user consoles). ControlCenter-Compact and ControlCenter-Digital access the external server interfaces via server modules such as DVI-CPU (connection dongle). Both the ControlCenter-Digital and the ControlCenter-Compact can be cascaded. Large installations with up to 4 000 servers can be realized in this way. The ControlCenter-Digital and ControlCenter-Compact systems are compatible with one another and use the same end devices (CON and CPU).

Using digital matrix terminal devices as extenders

Simple extender lines can also be created with a direct connection of the matrix terminal device (CON and CPU). The individual components are fully compatible with one another in relation to the video signals (VGA, DVI, HDMI, DP). The remote systems that are initially installed 1:1 can be combined, if needed, with a central matrix switch to allow the lines to be switched amongst themselves.

Analog KVM matrix systems

The analog KVM matrix systems CATCenter NEO and CompactCenter X2 operate the following signals:

- VGA
- Keyboard and mouse (USB and PS/2)
- Audio, selectable (only CATCenter NEO)

A functional system comprises at least the following elements:

- 1 × central unit (CATCenter NEO or CompactCenter X2)
- 1 × server module (CATpro2)
- 1 × operator station unit (UCON), exception: CompactCenter X2
- 2 × transmission cable (CAT cable)

The operator stations are connected to the CATCenter NEO via user console modules (UCON). With the CompactCenter X2, the operator station is integrated in the KVM matrix system. Both KVM matrix systems access the external server interfaces via the CATPro2 server modules (connection dongle).

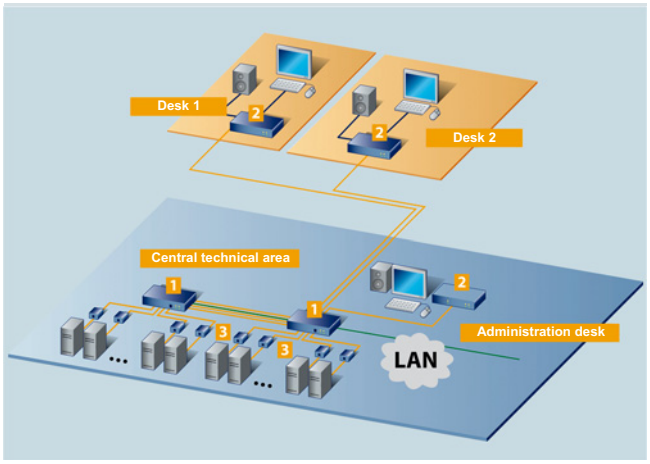
Whereas the CompactCenter X2 is used exclusively in standalone mode, the CATCenter NEO products can be combined and expanded with up to 2048 servers and 128 operator stations. Using the "bridge function", the CATCenter NEO also be integrated as a subordinate cascade in the digital matrix systems.

Note:

All KVM matrix systems can be used in combination with SIMATIC PCS 7 V8.x and V9.0.

Design

Digital KVM matrix system ControlCenter-Compact



Digital KVM matrix system ControlCenter-Compact, 1: ControlCenter-Compact, 2: DVI-CON, 3: DVI-CPU

The digital KVM matrix system ControlCenter-Compact enables independent operation of n servers from m operator stations consisting of monitor, keyboard, and mouse.

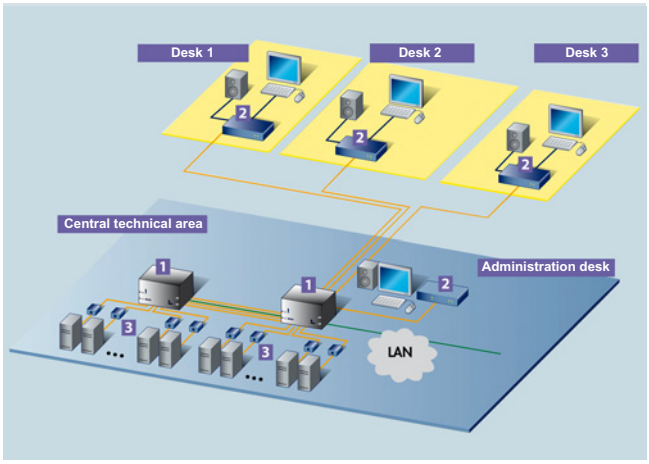
Thanks to the dynamic port technology, each individual ControlCenter-Compact port can be configured either as a server unit connection or an operator station unit connection.

ControlCenter-Compact is offered in seven graded versions: CCC 8, CCC 16, CCC 32, CCC 48, CCC 64, CCC 80 and CCC 112. In stand-alone mode, applications with up to 16, 32, 48, 64 or 80 terminal devices (server modules or operator station units) can be configured. The number of terminals can be greatly extended by cascading the devices, enabling implementation of large installations with hundreds of servers.

Typical applications for the ControlCenter-Compact are large plants with many servers which have to be controlled from several distributed operator stations.

ControlCenter-Compact modules

Digital KVM matrix system ControlCenter-Digital



Digital KVM matrix system ControlCenter-Digital, 1: ControlCenter-Digital, 2: DVI-CON, 3: DVI-CPU

The modular and highly flexible KVM matrix system ControlCenter-Digital enables independent operation of n servers from m operator stations consisting of monitor, keyboard, and mouse. It is particularly suitable for large plants with numerous servers.

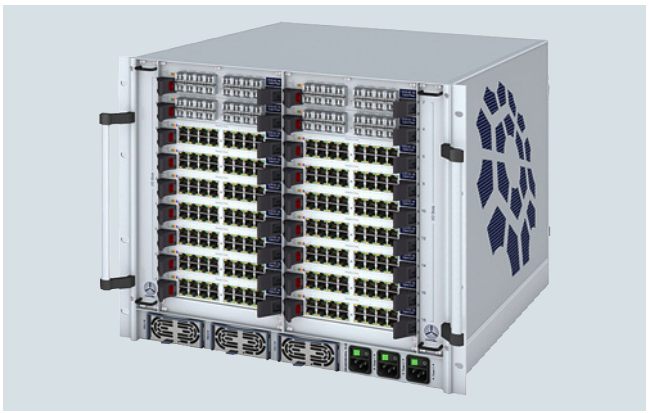
Thanks to the dynamic port technology, all ports can be used either as a server unit connection or an operator station unit connection. The ControlCenter-Digital automatically detects whether a server unit or operator station unit is connected.

Depending on the configuration level, up to 80, 160 or 288 ports are available for operator stations or servers. The configuration with 288 ports therefore allows 1 to 287 servers to be operated and monitored from 287 to 1 simultaneous operator stations. Larger installations are also possible by cascading.

The modular design can be flexibly adapted and expanded depending on the project requirements, since the controller, switch and I/O cards, as well as power supplies and fan modules, can be replaced rapidly and simply thanks to hot plugging/swapping.

Highlights

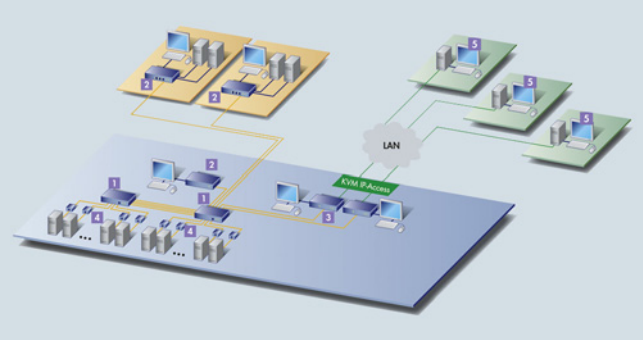
- High flexibility thanks to complete modularity of system components
- Triple redundant power supply
- Hot swapping of individual components



ControlCenter-Digital with 288 ports

Design (continued)

Analog KVM matrix system CATCenter NEO



Architecture with KVM matrix system CATCenter NEO
(schematic representation)
1: CATCenter NEO, 2: UCON,
3: UCON-IP-NEO (+ local workstation), 4: CATpro2, 5: IP client

The analog KVM matrix system CATCenter NEO operates the VGA, keyboard, mouse and audio signals. It is designed for larger plants in which the servers are accessed from multiple operator stations. The operator stations can also be distributed between different locations.

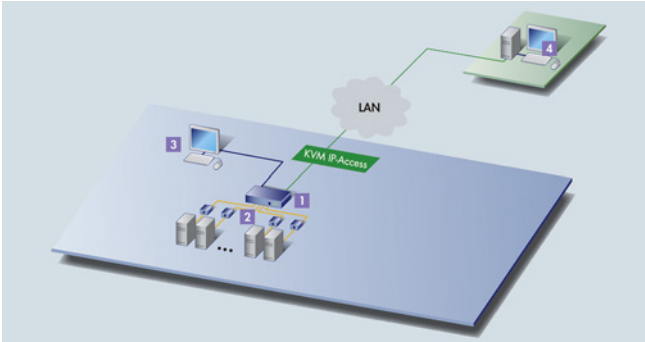
In addition to the central unit, a functional system also comprises the additional modules required for connecting the servers and operator stations:

- Central unit: KVM matrix system CATCenter NEO, versions for 4/32, 8/32 or 16/64 (operator stations/servers)
- Operator station unit: User console UCON
- Server unit: Server connection dongle CATpro2

CATCenter NEO modules

The KVM matrix system CATCenter NEO can be configured per Web interface. A network connection is integrated in all CATCenter NEO model versions (SNMP, Syslog, monitoring functionality, configuration).

Analog KVM matrix system CompactCenter X2



Architecture with analog KVM matrix system CompactCenter X2
(schematic representation),
1: CompactCenter X2, 2: CAT connection (to CATpro2),
3: Local workstation, 4: IP workstation

The analog KVM matrix system CompactCenter X2 operates the VGA, keyboard and mouse signals. It can be used for efficient administration and simultaneous operation of up to 16 servers from 2 operator stations:

- 1 × analog, directly on the CompactCenter
- 1 × per LAN/WAN over IP

The central administration of individual (distributed) plant sections is a possible application example of an operator station connected by LAN/WAN over IP.

In addition to the central unit, a functional system also includes a module for connecting the server:

- Central unit: KVM matrix system CompactCenter X2 with 2 integrated operator station connections
- Server unit: Server connection dongle CATpro2, versions

CompactCenter X2 modules

Technical specifications

Specification	ControlCenter-Compact	ControlCenter-Digital	CATCenter NEO (4, 8, 16)	CompactCenter X2
Number of consoles or operator stations	Min. 1 to max. 111 + splitting into multiple clusters	Min. 1 to max. 287 + splitting into multiple clusters	4/8/16 (via operator station units UCON) + splitting into multiple clusters	2 (1 × local, analog; 1 × per LAN/WAN, over IP)
Number of servers	Min. 1 to max. 111 + cascading	Min. 1 to max. 287 + cascading	32/32/64 + cascading	16
Video				
• Port	Standard DVI interface, DisplayPort, HDMI and VGA	Standard DVI interface, DisplayPort, HDMI and VGA	Standard VGA interface, DVI	Standard VGA interface, DVI
• Max. resolution				
- Analog	–	–	1920 × 1440 at 60 Hz	1920 × 1440 at 60 Hz
- Digital (over IP)	Up to 3840 × 2160 at 60 Hz (4K)	Up to 3840 × 2160 at 60 Hz (4K)	1920 × 1200 at 60 Hz in accordance with VESA CVT-RB	1600 × 1200 at 60 Hz in accordance with VESA DMT or 1920 × 1200 at 60 Hz in accordance with VESA CVT-RB
• Bandwidth	Up to 600 MHz	Up to 600 MHz	Up to 250 MHz	Up to 250 MHz
• H/V sync	50 ... 180 kHz, 30 ... 130 Hz	50 ... 180 kHz, 30 ... 130 Hz	50 ... 180 kHz, 30 ... 130 Hz	50 ... 180 kHz, 30 ... 130 Hz
• Color depth	24 bit digital	24 bit digital	32 bit analog, 8 bit digital	32 bit analog, 8 bit digital
• Image optimization	Automatic video setting	Automatic video setting	Automatic video setting, individually adjustable	Automatic video setting, individually adjustable
Keyboard/mouse				
• Interfaces in direction: Server	PS/2, USB	PS/2, USB	PS/2, USB, SUN-USB, VT100	PS/2, USB, SUN-USB, VT100
• Interfaces in direction: Operator station	PS/2, USB	PS/2, USB	PS/2, USB, SUN-USB	PS/2, USB, SUN-USB
Audio	Bidirectional transmission of audio signals	Bidirectional transmission of stereo audio signals	Transmission of audio signals	–
• Bandwidth	22 kHz, sampling rate 96 kHz	22 kHz, sampling rate 96 kHz	20 kHz, sampling rate 44 kHz	–
• Resolution	24 bit digital	24 bit digital	24 bit	–
Construction type	Compact	Modular	Compact	Compact

More information

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You can find more information on the Internet at:
www.gdsys.de

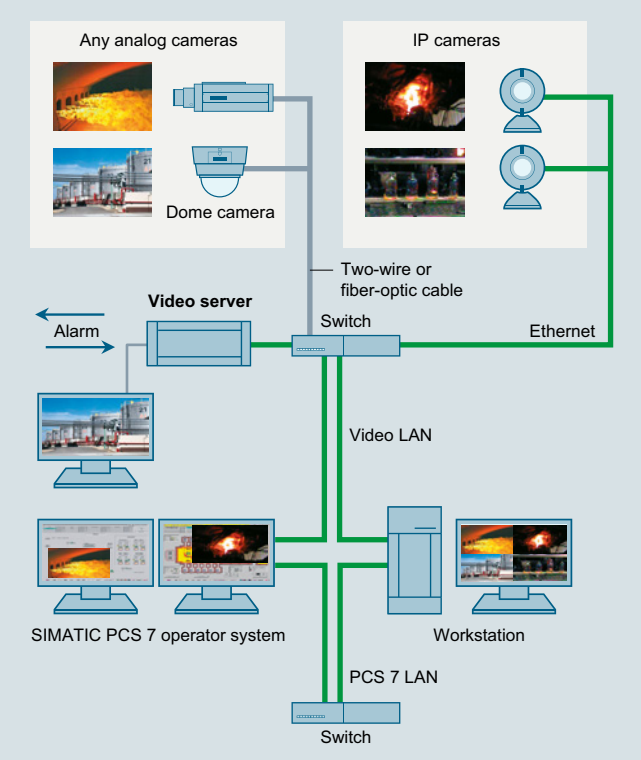
You can find detailed information about the **ControlCenter-Compact** and its components at:
www.gdsys.de/kvm-loesungen/digitale-kvm-matrixsysteme/zentralmodule/controlcenter-compact

You can find detailed information about the **ControlCenter-Digital** and its components at:
www.gdsys.de/kvm-loesungen/digitale-kvm-matrixsysteme/zentralmodule/controlcenter-digital

You can find detailed information about the **CATCenter NEO** and its components on the Internet at:
www.gdsys.de/kvm-loesungen/analoge-kvm-matrixsysteme/zentralmodule/catcenter-neo

You can find detailed information about the **CompactCenter X2** and its components on the Internet at:
www.gdsys.de/kvm-loesungen/analoge-kvm-matrixsysteme/zentralmodule/compactcenter-x

Overview



Video technology can make a highly versatile contribution toward rationalization of production processes. Remote from the process, you are able to view important process sequences, evaluate the actual product state, direct the flow of goods, check areas which are difficult or even impossible to access, and much more.

The use of video technology in process automation permits, for example:

- Prevention of production faults and waste
- Optimization of energy costs for combustion processes
- Saving of personnel costs

It is extremely easy to integrate live video data from web or analog cameras into the SIMATIC PCS 7 operator system using VisorX/NG video technology products from ASE GmbH. The VisorX/NG video server is configured with ASE software. Otherwise, no additional settings are necessary.

Note:

VisorX/NG video technology can be used in combination with SIMATIC PCS 7 V8.X and V9.0.

More information

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Lusshardtstrasse 6
76646 Bruchsal
Germany

Tel.: +49 7251 93259-0
Fax: +49 7251 93259-99

E-mail: vertrieb@ase-gmbh.eu

You can find additional information in the Internet at:
www.ase-gmbh.eu

Function

Real-time for all channels

The VisorX/NG video server works in real time, i.e. it is able to record up to 25 images per second for each video channel. Image recording can be carried out time-based, event-controlled or also permanently.

Special features:

- Digital saving and transmission of video and audio signals together with multi-standard compression and state-of-the-art image analysis algorithms
- Video management functionality based on user-programmable, internal logic control
- Redundant power supply expansion and internal SATA RAID expansion possible

Event control

The live video images are displayed on the SIMATIC PCS 7 operator station as a continuous image and/or dependent on a request or controlled by a particular event.

IP cameras

The VisorX/NG software can be used to directly integrate video signals from web cameras into the SIMATIC PCS 7 process control system. It can be integrated with Windows ActiveX.

Analog cameras

The image information recorded by up to 32 analog cameras is digitized in the VisorX/NG video server, saved in compressed form, and transferred to the SIMATIC PCS 7 process control system via an Ethernet interface.

Infrared cameras

Infrared cameras for recording of thermal images are particularly suitable for monitoring, evaluating and optimizing combustion processes, for determining temperature distributions, or for fire protection.

Camera control

Cameras with PTZ (pan/tilt/zoom) function or dome cameras can be controlled from any authorized workstation in the network using a mouse and keyboard.

Cascade option

As many as 32 cameras can be connected to each VisorX/NG video server. The number of cameras used can be extended as desired by cascading video servers.

History memory

The history memory enables precise analysis of a particular event by analyzing it in the long-term archive. Unauthorized access to the long-term archive can be checked by using a password (data protection). Every time archive material is accessed it is documented.

Licensing

Enabling of OS clients is based on the user's own license administration which can be operated centrally or decentrally.

Routing through various subnets

VisorX/NG software is used to connect cameras and clients in different subnets.

Extreme ambient conditions

When combined with a wide range of enclosures, cameras can be used in hazardous areas (certified according to ATEX), in offshore applications, or in furnaces.

Overview

SIMATIC HMI Thin Client Ex2 with international approvals for operation and monitoring in hazardous areas.

Application

The SIMATIC HMI Thin Client Ex2 is designed for use as an operator station for terminal and client applications in hazardous areas, and in particular for applications for which the performance of the SIMATIC HMI Panel PC Ex is insufficient, or when the server is located in a protected area of the plant. The widely-used RDP and Real VNC protocols are supported.

Together with the digital KVM Box, the device functions as a flexible monitor with touch functionality for PCs e.g. in control rooms.

Integration

Integrated interfaces of SIMATIC HMI Thin Client Ex2:

- 10/100 Mbit 100 base TX (Ex e) or 100 base FX (Ex op is) network
- 1 x RS232 or 1 x RS422/485
- 4 x USB 2.0 (2 x Ex I, 2 x Ex e (Zone 1 version) and/or 2 x Ex nA (Zone 2 version))

Technical specifications

	SIMATIC HMI Thin Client Ex2
General features	
Design	Thin Client built-in unit, available in protective enclosure as an option
Front	15" and 19" display
Operation	Touch with 8 function keys
MTBF backlight	50 000 h
Operating system	Windows 10 Enterprise 2016 LTSB
Mass storage	integrated, 64 GB SSD
Power supply	24 V DC, max. 2.1 A (19")
Interfaces	
Ethernet	100 Mbit Ex e, or alternatively fiber-optics 100 Mbit (SC) Ex op is
USB 2.0	2 x Ex i, 2 x Ex e (Zone 1) or 2 x Ex nA (Zone 2)
Serial	1 x RS232 or 1 x RS422/485
Ambient conditions	
Degree of protection	IP66 at front, IP65 at rear, IP66 in protective enclosure
Ambient temperature during operation	-20 °C ... + 50 °C, (cold start -10 °C) with optional auxiliary heater down to -30 °C
Relative humidity during operation	90 % at 40 °C, no condensation

	SIMATIC HMI Thin Client Ex2
Approvals/directives	
Devices in "Zone 1" version	
ATEX directive 94/9/EC	
• Network 10/100 Base-Tx	II 2 (2) G Ex d e ia ib mb [ia ib] IIC T4 Gb II 2 (2) D Ex ia tb [ia ib] IIIC T80°C Db IP66
• Network 10/100 Base-Fx	II 2 (2) G Ex d e ia ib mb [ia ib op is] IIC T4 Gb II 2 (2) D Ex ia tb [ia ib op is] IIIC T80°C Db IP66
IECEx	
• Network 10/100 Base-Tx	Ex d e ia ib mb [ia ib] IIC T4 Gb Ex ia tb [ia ib] IIIC T80°C Db IP66
• Network 10/100 Base-Fx	Ex d e ia ib mb [ia ib op is] IIC T4 Gb Ex ia tb [ia ib op is] IIIC T80°C Db IP66
GOST-R	
• Network 10/100 Base-Tx	2 Ex d e ia ib mb [iaib] IIC T4 DIP A21 TA80°C, IP66
• Network 10/100 Base-Fx	2 Ex d e ia ib mb [iaibopis] IIC T4 DIP A21 TA80°C, IP66
CSA	Ex d e ia ib mb [ia ib] IIC T4 Gb, Type 4X, IP66 Class II, Division 1, Groups E, F, G, T80°C Ex ia tb [ia ib] IIIC T80°C Db, IP66
KGS	Ex d e ia ib mb [ia ib] IIC T4 Ex ia tb [ia ib] IIIC T80°C Db IP66
InMetro	
• Network 10/100 Base-Tx	Ex d e ia ib mb [ia ib] IIC T4 Gb Ex ia tb [ia ib] IIIC T80°C Db IP66
• Network 10/100 Base-Fx	Ex d e ia ib mb [ia ib op is] IIC T4 Gb Ex ia tb [ia ib op is] IIIC T80°C Db IP66
Devices in version "Zone 2"	
ATEX directive 94/9/EC	
• Network 10/100 Base-Tx	II 3 (2/3) G Ex d e ia ib mb nA [ib Gb] [ic] IIC T4 Gc II3 (2/3) D Ex ia tc [ib Db] [ic] IIIC T80°C Dc IP66
• Network 10/100 Base-Fx	II 3 (2/3) G Ex d e ia ib mb nA [ib op is Gb] [ic] IIC T4 Gc II 3 (2/3) D Ex ia tc [ib op is Db] [ic] IIIC T80°C Dc IP66
IECEx	
• Network 10/100 Base-Tx	Ex d e ia ib mb nA [ib Gb] [ic] IIC T4 Gc Ex ia tc [ib Db] [ic] IIIC T80°C Dc IP66
• Network 10/100 Base-Fx	Ex d e ia ib mb nA [ib op is Gb] [ic] IIC T4 Gc Ex ia tc [ib op is Db] [ic] IIIC T80°C Dc IP66
GOST-R	
• Network 10/100 Base-Tx	2 Ex de i a ib mb nA [ib][ic] IIC T4 DIP A21 TA80°C, IP66
• Network 10/100 Base-Fx	2 Ex de i a ib mb nA [ibopis][ic] IIC T4 DIP A21 TA80°C, IP66
CSA	Ex d e ia ib mb nA [ib Gb] [ic] IIC T4 Gc, Type 4X, IP66 Class II, Division 2, Groups E, F, G, T80°C; Ex ia tc [ib ic] IIIC T80°C Dc, IP66
InMetro	
• Network 10/100 Base-Tx	Ex d e ia ib mb nA [ib Gb] [ic] IIC T4 Gc Ex ia tc [ib Db] [ic] IIIC T80°C Dc IP66
• Network 10/100 Base-Fx	Ex d e ia ib mb nA [ib op is Gb] IIC T4 Ex ia tc [ib op is Db] [ic] IIIC T80°C Dc IP66
Protocols	RDP, RealVNC
Digital KVM switch	Input: DVI / VGA, PS/2 / USB, output: RJ45 (IP network)
Dimensions	
Mounting dimensions (W x H x D) in mm	15": 427.5 x 327.5 x 165 19": 522.5 x 412.5 x 165
Front dimensions in mm	15": 440 x 340 19": 535 x 425
Weight	15": 15 kg, 19": 23 kg

Ordering data

	Article No.
SIMATIC HMI Thin Client Ex2	**6AV7200-**
Intel Atom E3845 1.91 GHz, 24 V DC power supply	**7 ■ ■ 0 ■ - ■ ■ ■ ■ -z**
Design / display size	
• Zone 2: 15" touch with 8 function keys	**A**
• Zone 2: 19" touch with 8 function keys	**B**
• Zone 1: 15" touch with 8 function keys	**C**
• Zone 1: 19" touch with 8 function keys	**D**
Networks	
• 10/100 BaseTX, copper Ethernet	**A**
• 100 BaseFX, Fibre Optic Ethernet	**B**
Mass storage / main memory / operating system	
• 64 GB SSD, 4 GB RAM, Windows 10 IoT & Remote Firmware V5	**0**
Optional interfaces	
• No interfaces	**0**
• Second serial interface	**1**
• Intrinsically safe reader interface	**2**
Enclosure type and material	
• No enclosure	**0**
• Cleanroom enclosure front door (CFR), SS304	**1**
• Front door enclosure (FR), SS304	**2**
• Backdoor enclosure (BD), SS304; (only without wall mounting, without 240 V AC and without -30 °C options)	**3**
Keyboard with housing; layout	
• No keyboard	**A**
• Keyboard SS304, layout DE	**B**
• Keyboard SS304, layout US	**C**
• Keyboard SS304, layout FR	**D**
• Keyboard SS304, layout DK	**E**
Integrated mouse / trackball	
• No mouse/trackball	**A**
• Trackball 50 mm IP54 integrated	**B**
• Trackball 50 mm IP54 separate	**C**
Mounting options	
• Without, front panel mounting only	**0**
• Direct wall mounting	**1**
• Mount for pedestal or bracket mounting on enclosure base	**2**
• Mount for ceiling or bracket mounting on enclosure top part	**3**
Additional options	
• 100 .. 240 V AC power supply, (requires enclosure)	**A01**
• Outdoor to -20 °C (requires enclosure, only without keyboard)	**B01**
• -20°C (only without keyboard)	**C01**
• Emergency off button 8003 right (only with enclosure)	**D01**
• Emergency off button 8003 left (only with enclosure)	**E01**
• Outdoor to -30 °C (requires enclosure, only without keyboard)	**F01**
• Outdoor to -10 °C (requires enclosure, for keyboard)	**G01**

Note:

Please assemble the required IPC configuration using the TIA Selection Tool or configurator in the Industry Mall in order to ensure suitability; we do not accept any liability for configurations compiled by users themselves.

Accessories	
Digital KVM for HMI Thin Client Ex	**6AV7675-0EX00-0AA0**
USB drive	
• Intrinsically safe, 16 GB	**6AV7675-0FX00-0AA0**
• Intrinsically safe, 16 GB with recovery function	**6AV7675-0FX10-0AA0**
Ethernet switch	**6AV7675-0PX00-0AA0**
With FOC 4 x 100 Base Tx, 1 x 100 Base (MTRJ) Fx Ex op is	

Dimensional drawings

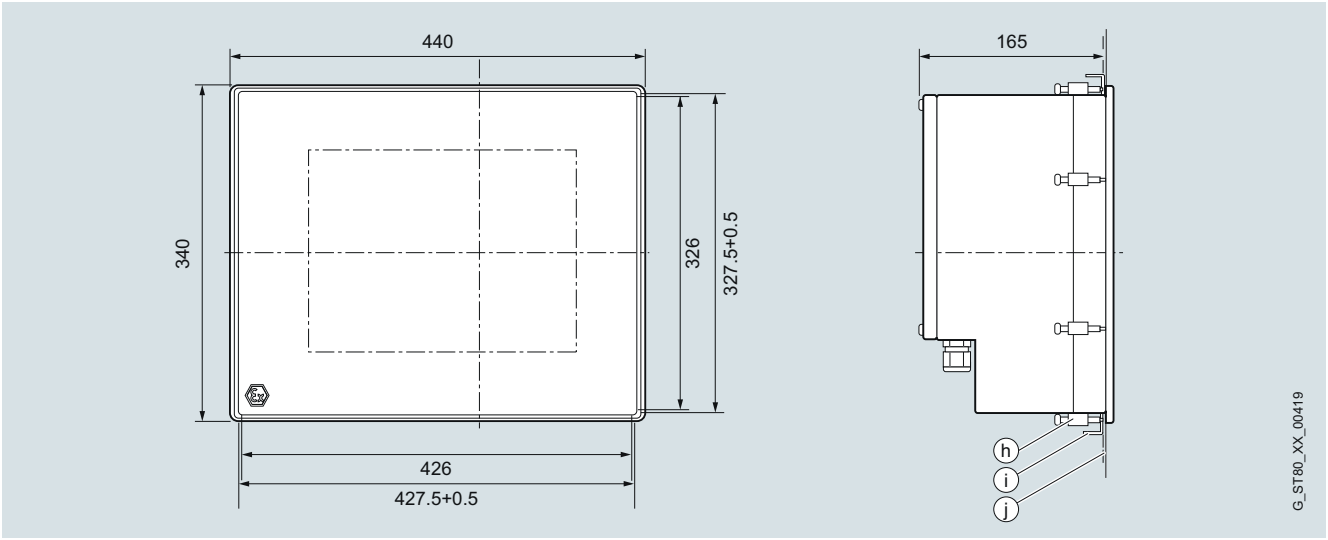
Legend:

h = Mounting clamp (10 x)

i = Clamping frame

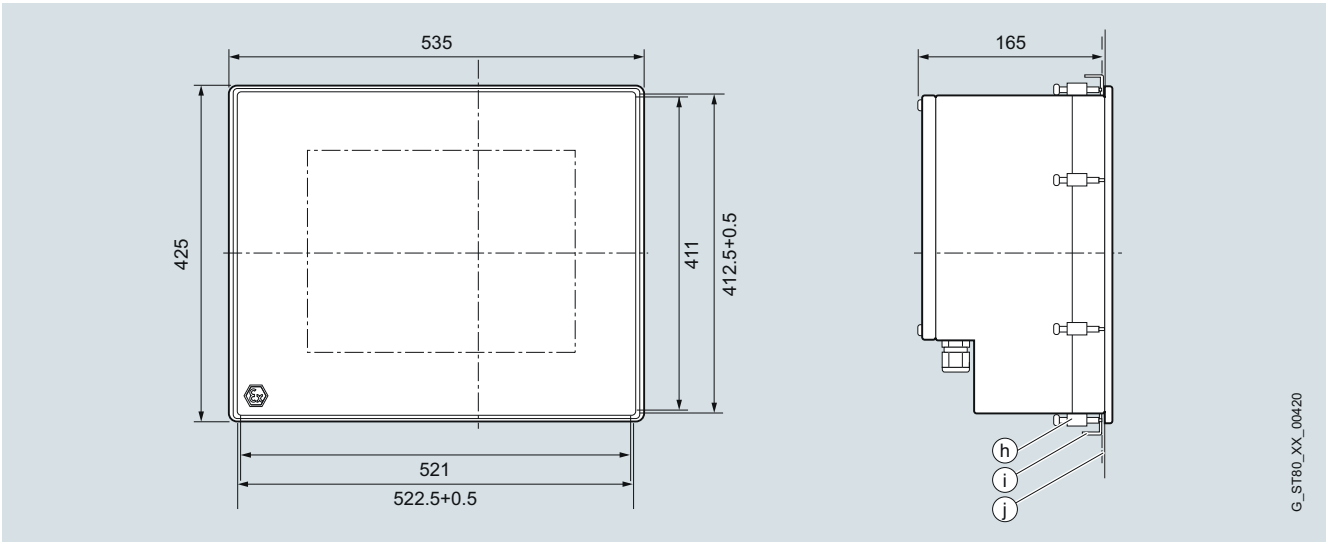
j = Control cabinet or enclosure

All dimensions in mm. For mounting cut-out see technical specifications.



SIMATIC HMI Thin Client Ex 15"

15" touch front	Width in mm	Height in mm	Depth in mm
Operating unit	440	340	165
Installation cutout	427.5 ± 0.5	327.5 ± 0.5	-



SIMATIC HMI Thin Client Ex 19"

19" touch front	Width in mm	Height in mm	Depth in mm
Operating unit	535	425	165
Installation cutout	522 ± 0.5	412.5 ± 0.5	-

More information

Additional information is available on the Internet at:

www.siemens.com/simatic-hmi-ex

Overview

As an alternative to the standard mouse, the "Mouse-Trak" trackball mouse is offered for operating SIMATIC PCS 7 operator stations. The Mouse-Trak is available in two versions for different applications. The devices are equipped either with a PS/2 or USB interface.

Note:

Mouse-Trak Professional and Mouse-Trak Industrial are compatible with SIMATIC PCS 7 V8.x and V9.0.

Design

- Mouse-Trak Professional for problem-free continuous use in office environments
  - B5XXMP-XROHS (PS/2)
  - B5XUSB-XROHS (USB)
- Mouse-Trak Industrial for harsh environmental requirements (see figure)
  - BMPIND-XROHS (PS/2)
  - BUSBID-XROHS (USB)

More information

Chameleon Group GmbH
Viersener Straße 172
D-47877 Willich
Germany

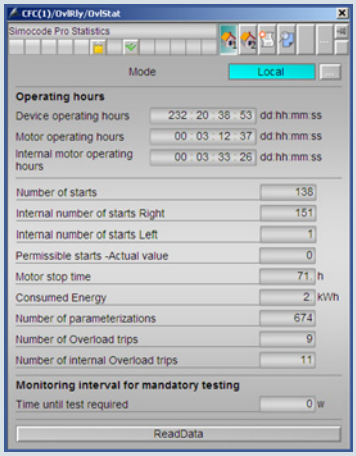
Tel.: +49 2156 3065476
Fax: +49 2156 4989157

E-mail: sales@chameleon-group.com

Additional information is available on the Internet at:

www.chameleon-group.com

Overview



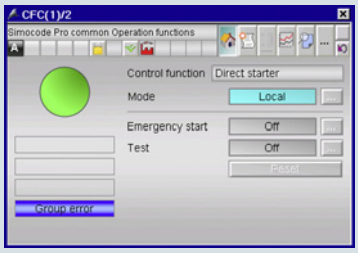
Advanced Process Library (APL) - faceplates and blocks for statistical data of the SIMOCODE pro library for PCS 7

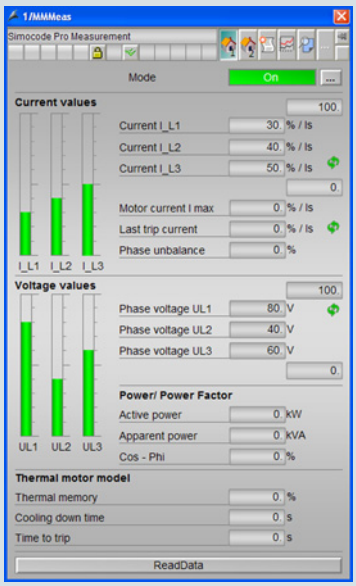
More information

Technical data,
see https://support.industry.siemens.com/cs/ww/en/ps/16718/td

Programming and Operating Manual for the "SIMOCODE pro PCS 7 Library" Block Libraries:
- Version V9 with Advanced Process Library (APL),
  see https://support.industry.siemens.com/cs/ww/en/view/109748465
- Version V8.2 with Advanced Process Library (APL),
  see https://support.industry.siemens.com/cs/ww/en/view/103954289
- Version V8.0 + SP3 with Advanced Process Library (APL),
  see https://support.industry.siemens.com/cs/ww/en/view/84626047
- Version V7-V9 migration,
  see https://support.industry.siemens.com/cs/ww/en/view/109749358

The PCS 7 block library can be used for simple and easy integration of SIMOCODE pro into the SIMATIC PCS 7 process control system. One focus is on easy configuration, because the number of configuration steps is reduced crucially. The configuration of the modules is based on the PCS 7 standard configuration processes and is optimally harmonized with the functions of SIMOCODE pro. Users who have previously integrated conventional motor feeders into PCS 7 will therefore find it easy to switch to SIMOCODE pro.





Advanced Process Library (APL) - faceplates and function blocks for control and measured data of the SIMOCODE pro library for PCS 7

Benefits

- Uniform and continuous integration into SIMATIC PCS 7
- Standardized function blocks for simple integration and optimal operation
- Greater process transparency due to greater information density in the I&C system

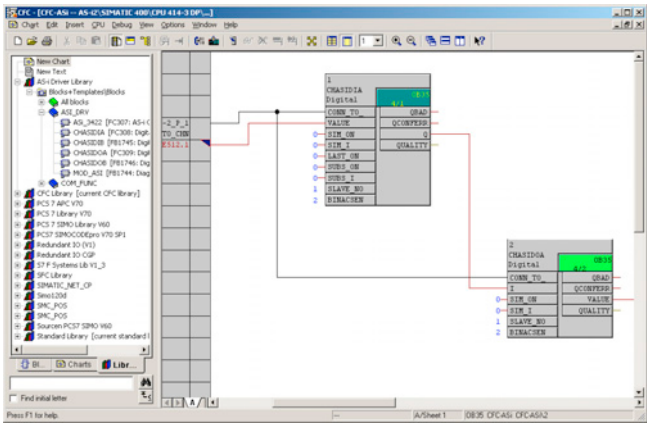
Ordering data

	Version	Article No.
SIMOCODE pro block library for SIMATIC PCS 7 version V9 with Advanced Process Library (APL)		
	**Engineering software V9** For one engineering station (single license) including runtime software for execution of the AS blocks in an automation system (single license), German/English Scope of supply: AS blocks and faceplates for integrating SIMOCODE pro into the PCS 7 process control system with Advanced Process Library, for PCS 7 version V9.0 Type of delivery: Software and documentation on CD, one license for one engineering station, one license for one automation system	**3ZS1632-1XX03-0YA0**
	Runtime license V9 For execution of the AS blocks in an automation system (single license) Required for using the AS blocks of the engineering software V9 within a plant Type of delivery: One license for one automation system, without software and documentation	**3ZS1632-2XX03-0YB0**
	Upgrade for PCS 7 block library SIMOCODE pro V8 To version SIMOCODE pro V9 for one engineering station (single license) including runtime software for execution of the AS blocks in an automation system (single license), German/English Scope of supply: AS blocks and faceplates for integrating SIMOCODE pro into the PCS 7 process control system with Advanced Process Library, for PCS 7 version V9.0 Type of delivery: Software and documentation on CD, one license for one engineering station, one license for one automation system	**3ZS1632-1XX03-0YE0**
SIMOCODE pro block library for SIMATIC PCS 7 version V8 with Advanced Process Library (APL)		
	**Engineering software V8** For one engineering station (single license) including runtime software for execution of the AS blocks in an automation system (single license), German/English Scope of supply: AS blocks and faceplates for integrating SIMOCODE pro into the PCS 7 process control system, with Advanced Process Library for PCS 7 versions V8.0, V8.1 and V8.2 Type of delivery: Software and documentation on CD, one license for one engineering station, one license for one automation system	**3ZS1632-1XX02-0YA0**
	Runtime license V8 For execution of the AS blocks in an automation system (single license) Required for using the AS blocks of the engineering software V8 within a plant Type of delivery: One license for one automation system, without software and documentation	**3ZS1632-2XX02-0YB0**

Ordering data (continued)

Version	Article No.
SIMOCODE pro block library for SIMATIC PCS 7 version V7 without Advanced Process Library (APL)	
 **Engineering software V7** For one engineering station (single license) including runtime software for execution of the AS blocks in an automation system (single license), German/English/French Scope of supply: AS blocks and faceplates for integrating SIMOCODE pro into the PCS 7 process control system, for PCS 7 versions V7.0/V7.1 Type of delivery: Software and documentation on CD, one license for one engineering station, one license for one automation system	**3UF7982-0AA10-0**
Runtime license V7 For execution of the AS blocks in an automation system (single license) Required for using the AS blocks of the engineering software V7 or the engineering software migration V7-V9 on an additional automation system within a plant Type of delivery: One license for one automation system, without software and documentation	**3UF7982-0AA11-0**
Engineering software migration V7-V9 For upgrading (migrating) an existing engineering software V7 of the SIMOCODE pro block library for PCS 7 Conditions of use: Availability of the engineering software V7 (license) of the SIMOCODE pro block library for PCS 7 for the PCS 7 version V7.0 or V7.1 The engineering software migration V7-V9 can be installed directly onto a system with PCS 7 versions V8 or V9; installation of the previous version is unnecessary. For one engineering station (single license) including runtime software for execution of the AS blocks in an automation system (single license), German/English/French Scope of supply: AS blocks and faceplates for integrating SIMOCODE pro into the PCS 7 process control system, for PCS 7 versions V8.0/V8.1/V8.2/V9.0 Type of delivery: Software and documentation on CD, license for upgrading an existing license for one engineering station and a plant's assigned runtime licenses	**3UF7982-0AA20-0**

Overview



AS-Interface block library for SIMATIC PCS 7 in the CFC chart

More information

Technical data,
see https://support.industry.siemens.com/cs/ww/en/ps/16719/td

Programming Manual for AS-Interface block library for SIMATIC PCS 7
- Version V9 with Advanced Process Library (APL),
  see https://support.industry.siemens.com/cs/ww/en/view/109748320
- Version V8 with Advanced Process Library (APL),
  see https://support.industry.siemens.com/cs/ww/en/view/90690873
- Version migration V7-V9 without Advanced Process Library,
  see https://support.industry.siemens.com/cs/ww/en/view/105795722
- Version V7 without Advanced Process Library,
  see https://support.industry.siemens.com/cs/ww/en/view/46504691

The AS-i function block library for PCS 7 is integrated in the SIMATIC PCS 7 process control system and expands it for integration of the AS-Interface system.

As the result, the advantages of AS-Interface such as the considerable reduction of wiring outlay for distributed actuators/sensors and very simple installation can also be used in a system based on PCS 7.

The library contains modules for accessing the I/O data of AS-i slaves, modules for diagnostics of the AS-i system, and a faceplate for the PCS 7 Maintenance Station.

Supported AS-Interface modules

The AS-Interface block library for PCS 7 can be used with the following AS-i master and link modules:

- CM AS-i Master ST (in ET 200SP station) 3RK7137-6SA00-0BC1 (engineering software V9 and V8.1 only)
- CP 343-2 (in ET 200M station) 6GK7343-2AH01-0XA0
- CP 343-2P (in ET 200M station) 6GK7343-2AH11-0XA0
- DP/AS-i Link Advanced single master 6GK1415-2BA10
- DP/AS-i Link Advanced double master 6GK1415-2BA20
- IE/AS-i Link PN IO single master 6GK1411-2AB10 (engineering software V9 or V8.1 and V8 only)
- IE/AS-i Link PN IO double master 6GK1411-2AB20 (engineering software V9 or V8.1 and V8 only)

The CM AS-i Master ST module is supported with IM 155-6 PN High Feature within an ET 200SP station interfaced via PROFINET.

The AS-i Master CP 343-2 and CP 343-2P are supported within an ET 200M station interfaced via PROFINET or PROFIBUS.

With the CM AS-i Master ST, CP 343-2 or CP 343-2P modules, digital AS-i slaves with standard addressing and extended addressing (A/B slaves; see also remark under the Area of Application heading) can be operated via the library.

In combination with the IE/AS-i Link PN IO and the DP/AS-i Link Advanced, it is possible to integrate digital and analog AS-i slaves with standard and extended addressing (A/B slaves).

Hardware and software requirements

The libraries require the following PCS 7 versions:

- Engineering software V9: PCS 7 version from V9
- Engineering software V8.1: PCS 7 version V8.0 SP1 Update 3 and higher, can also be used for PCS 7 versions V8.1 and V8.2
- Engineering software migration V7-V9: PCS 7 version V8.0 SP1 and higher, can also be used for PCS 7 Version V8.1, V8.2 and V9
- Engineering software V7: PCS 7 version V6.1, V7.0 or V7.1

The engineering software migration V7-V9 comprises the same interconnection logic of the CFC blocks as the engineering software V7 and is recommended for the switch to PCS 7 V8 or PCS 7 V9 with only a few adjustments required in the PCS 7 project.

The engineering software V9 and engineering software V8.1 use APL interconnection logic and are recommended for new PCS 7 projects.

Benefits

- Easy connection of AS-Interface to PCS 7
- Engineering work reduced to positioning and connecting the function blocks in the CFC
- With no additional configuring steps required for connection to the PCS 7 Maintenance Station, diagnostics for the AS-i system is optimally guaranteed.

Application

The AS-Interface block library for PCS 7 is used in systems based on PCS 7 where the actuators and sensors are to be connected using AS-Interface.

Note:

The AS-i masters CP 343-2 and CP 343-2P do not transmit I/O data from AS-i slaves with a B address via the cyclic process image (partition), but via data records. To prevent delays in the communication of driver blocks for B slaves, we recommended avoiding the use of AS-i slaves with B addresses for PCS 7 configurations with CP 343-2 or CP 343-2P.

More information

Notes:

The engineering software V8.1 is available as an upgrade package for downloading from the Internet. Existing engineering software V8 + SP1 is required for installation of the upgrade package. In addition to the upgrade package, a hotfix for the engineering software V8 + SP1 (without upgrade) is available for download, see https://support.industry.siemens.com/cs/ww/en/view/109480456.

The engineering software product package includes the associated block library service pack, if available. The service pack for the engineering software migration V7-V9 or engineering software V7 can only be obtained in the package with the engineering software. The service pack for these two versions is not available for downloading.

For additional information on the use of analog AS-i slaves in a configuration with SIMATIC PCS 7 V8.1, see
- https://support.industry.siemens.com/cs/ww/en/view/90880814
- https://support.industry.siemens.com/cs/ww/en/view/65710726

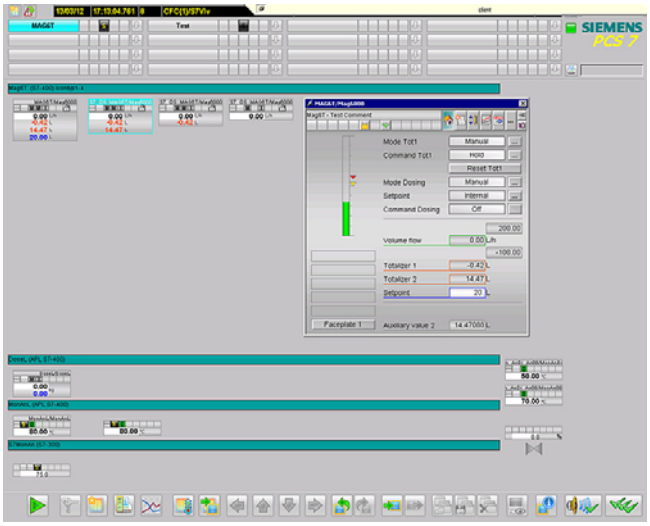
Ordering data

Version	Article No.
AS-Interface block library for SIMATIC PCS 7 version V9 with Advanced Process Library (APL)	
 **Engineering software V9** For one engineering station (single license) including runtime software for execution of the AS blocks in an automation system (single license), German/English Scope of supply: AS blocks and faceplates for integrating AS-Interface into the PCS 7 process control system with Advanced Process Library (APL), for PCS 7 version V9 and higher Type of delivery: Software and documentation on CD, one license for one engineering station, one license for one automation system	**3ZS1635-1XX03-0YA0**
Runtime license V9 For execution of the AS blocks in an automation system (single license) Required for using the AS blocks of the engineering software V9 on an additional automation system within a plant Type of delivery: One license for one automation system, without software and documentation	**3ZS1635-2XX03-0YB0**
AS-Interface block library for SIMATIC PCS 7 version V8 with Advanced Process Library (APL)	
 **Engineering-Software V8.1** For one engineering station (single license) including runtime software for execution of the AS blocks in an automation system (single license), German/English Scope of supply: AS blocks and faceplates for integrating AS-Interface into the PCS 7 process control system with Advanced Process Library (APL), for PCS 7 version V8.0 SP1 and higher, also able to be used for PCS 7 versions V8.1 and V8.2 Type of delivery: Software and documentation on CD, one license for one engineering station, one license for one automation system	**3ZS1635-1XX02-0YA0**
Runtime license V8 For execution of the AS blocks in an automation system (single license) Required for using the AS blocks of the engineering software V8 or V8.1 on an additional automation system within a plant Type of delivery: One license for one automation system, without software and documentation	**3ZS1635-2XX02-0YB0**
AS-Interface block library for SIMATIC PCS 7 version V9 or V8 without Advanced Process Library (APL)	
 **Engineering software migration V7-V9** For upgrading (migrating) an existing engineering software V7 of the AS-Interface block library for PCS 7 or for upgrading (migrating) an existing engineering software V8 or V8.1 of the AS-Interface block library for PCS 7 without APL For one engineering station (single license) including runtime software for execution of the AS blocks in an automation system (single license), German/English Conditions of use: Availability of the engineering software V7 (license) of the AS-Interface block library for PCS 7 for the PCS 7 versions V6.1, V7.0 or V7.1, or availability of the engineering software V8 or V8.1 (license) of the AS-Interface block library for PCS 7 for the PCS 7 version V8 The engineering software migration V7-V9 can be installed directly onto a system with PCS 7 versions V9 or V8; installation of the previous version is unnecessary. Scope of supply: AS blocks and faceplates for integrating AS-Interface into the PCS 7 process control system, for PCS 7 versions V9 or V8.0 SP1, V8.1 and V8.2,including block library service pack SP3 Type of delivery: Software and documentation on CD, license for upgrading an existing license for one engineering station and a plant's assigned runtime licenses	**3ZS1635-1XX11-0YE0**

Ordering data (continued)

	Version	Article No.
AS-Interface block library for SIMATIC PCS 7 version V7 without Advanced Process Library (APL)		
	**Engineering software V7** For one engineering station (single license) including runtime software for execution of the AS blocks in an automation system (single license), German/English Scope of supply: AS blocks and faceplates for integrating AS-Interface into the PCS 7 process control system, for PCS 7 versions V6.1, V7.0 or V7.1 including block library service pack SP1 Type of delivery: Software and documentation on CD, one license for one engineering station, one license for one automation system	**3ZS1635-1XX01-0YA0**
	Runtime license V7 For execution of the AS blocks in an automation system (single license) Required for using the AS blocks of the engineering software V7 or the engineering software migration V7-V8 on an additional automation system within a plant Type of delivery: One license for one automation system, without software and documentation	**3ZS1635-2XX01-0YB0**

Overview



The SITRANS Library for SIMATIC PCS 7 V8.0 and higher extends the standard functionality of the SIMATIC PCS 7 process control system concentrated in the SIMATIC PCS 7 Advanced Process Library (APL) with technological blocks and faceplates for device-specific functions of the SITRANS field devices.

Benefits

The SITRANS Library allows you to easily operate all device functions, such as the dosing of the SITRANS FM MAG 6000, in a single faceplate. It also supports operator control and monitoring via Touch Panels as well as the integration of SIMATIC S7 applications (SITRANS F M MAG6000 only). The SITRANS Library is based on the modern design of the Advanced Process Library (APL). Together with the APL, the SITRANS Library enables you to create harmonic solutions with a consistent look & feel and optimum use of the functions of the SITRANS field devices in many industries.

It helps accelerate the engineering process, reduces the time-to-market, and simplifies process control. In addition, operator functions (such as "Dosing") and process-related diagnostic information (such as empty pipe detection and flow direction) are provided.

Note:
SITRANS Library can only be used in combination with SIMATIC PCS 7 V8.0 or higher.

Ordering data

Ordering data	Article No.
SITRANS Library	**7MP2990-0AA00**
Block library for SIMATIC PCS 7 V8.0 and higher and SIMATIC S7 with function blocks and faceplates as well as electronic documentation Engineering software, software class A, 2 languages (English, German), runs with • Windows XP Professional 32-bit • Windows 7 Ultimate 32/64-bit, • Windows Server 2003 R2 Standard 32-bit • Windows Server 2008 R2 Standard 64-bit Engineering license for one customer plant Type of delivery: free download	

Application

The SITRANS Library is best used in combination with SIMATIC PCS 7 and SITRANS field devices.

A current list of SITRANS field devices and the supported SIMATIC PCS 7 versions is available at https://support.industry.siemens.com/cs/ww/de/view/85285872

The SITRANS Library can be used for all core sectors of the process industry. These are:

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

Design

The product structure, however, is geared toward the operational environment in the SIMATIC PCS 7 process control system. Consequently, SITRANS Library is offered in the form of an engineering component:

- SITRANS Library Engineering - software with engineering license
- SITRANS Library Runtime - license for one automation project (SIMATIC PCS 7 automation systems of all designs and S7-300 controllers)

The SITRANS Library product component enables you to perform configuration work on a SIMATIC PCS 7 engineering station.

The SITRANS Library product component allows you to run blocks from a library on an automation system.

When using function blocks from SITRANS Library in SIMATIC PCS 7 automation systems, note that SIMATIC PCS 7 AS Runtime POs are also booked.

Function

SITRANS Library for SIMATIC PCS 7/SIMATIC S7

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

- Function blocks and faceplates for SITRANS field devices
- Function blocks and faceplates for SITRANS field devices for S7-400 and SIMATIC S7-300 with WinCC

The function blocks are configured in CFC.

Operator control and monitoring from a panel is configured with the panel interface blocks for the SITRANS F M MAG 6000 DP. Taking operating rights and hierarchical operating concepts (multi-control room operation) into consideration, the technological function can then be operated from both an operator station and a Touch Panel.

For detailed information on which field devices, which systems and system versions are supported as well as on the free download, see:

https://support.industry.siemens.com/cs/ww/de/view/85285872

Overview

System-compliant integration of IO-Link devices

The IO-Link library enables the SIMATIC PCS 7-compliant integration of smart field devices with IO-Link. This includes engineering support by means of the SIMATIC PCS 7 driver wizard, comprehensive module and channel diagnostics, as well as the SIMATIC PCS 7 functionalities such as simulation, accompanying value formation, etc.

IO-Link technology

Smart sensors and actuators with IO-Link offer a large variety of possible uses thanks to flexible parameter assignment and comprehensive diagnostics data. One major advantage of IO-Link compared to other sensor bus systems is the transmission of data over an unshielded 3-wire cable that is also used for sensors without a bus connection. This means devices in an existing plant can be replaced with IO-Link sensors without changing the wiring. To replace a defective sensor without a parameterization tool, the device parameterization can also be saved in the IO-Link master module. This way the new device is automatically configured by the IO-Link master during startup.

The IO-Link library for SIMATIC PCS 7 enables the use of the integrated SIMATIC PCS 7 hardware and software engineering for IO-Link devices.

Note:

The IO-Link library has been released for SIMATIC PCS 7 V9.0 SP1. Please contact us if you need support for additional SIMATIC PCS 7 versions (see "More information" below).

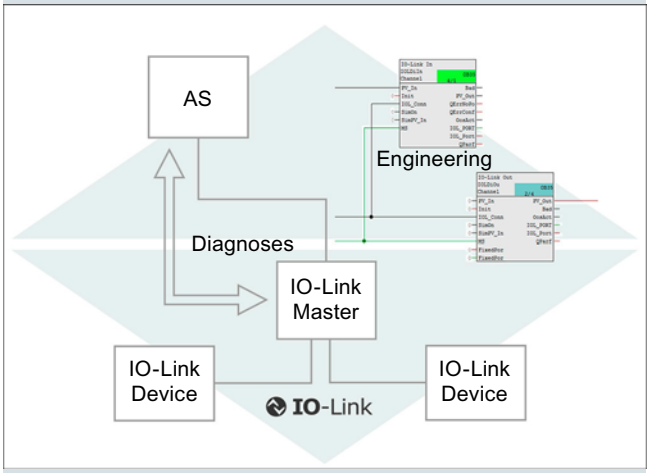
Application

With the IO-Link library for SIMATIC PCS 7, IO-Link devices of all manufacturers can be integrated.

A requirement is the use of an IO-Link master device that is supported by the library.

New master devices can be added depending on the requirement. Device blocks for IO-Link devices that support additional functionalities can be offered for specific projects.

Design



Included in the scope of delivery of the library:

- Diagnostics blocks for supported IO-Link master devices
- Device-independent channel drivers for various data types (e.g. IOL_DiIn, IOL_DiOu)
- Documentation in English

Currently supported IO-Link masters:

Manufacturer	Device	Article No.	Firmware version(s)
Siemens AG	CM 4x IO-Link	6ES7137-6BD00-0BA0	V2.0, V2.1

Additional IO-Link masters upon request.

More information

Codewerk GmbH
Siemensallee 75
76187 Karlsruhe, Germany

Tel.: +49 721 174 537 95

Email: sales@codewerk.de

For more information, visit:
www.codewerk.de/PCS7IOL

Overview

SIPAPER DCS APL (Advanced Process Library) is the standard library for implementing automation and process control solutions in the fiber industry and, together with the predecessor libraries, has been a part of the industry for more than 30 years.

Benefits

Long-term investment security in the fiber industry

Since automation systems and their associated libraries are created for a relatively long service life, proactive management of the system life cycle is an absolute must. For libraries, it can be assumed that they will be updated one or more times, or replaced entirely, during their life cycle, and will therefore require migrations. For the entire bandwidth of different DCS libraries for the fiber industry, the ability to migrate a previous library to the current library has always been an important aspect of planning. This involves lowering life cycle costs, maintaining continuity, securing competitiveness and avoiding obsolescence.

SIPAPER DCS APL is a fixed component of the SIPAPER product family that also includes SIPAPER Drives APL, SIPAPER Winder APL and SIPAPER QCS APL.

Mode of operation

SIPAPER DCS APL AS bundle

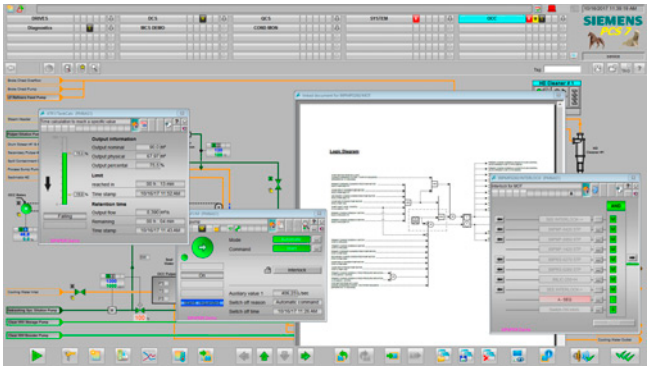
The SIMATIC PCS 7 library can be ordered as part of the SIPAPER DCS APL AS bundle. Its scope of delivery includes:

- SIMATIC PCS 7 AS 410 bundle
- SIPAPER DCS APL runtime license
- CPA Collector software

The SIPAPER DCS APL AS bundle equips you for:

- Plant-wide automation through the pre-assembled, pre-tested automation system with matching SIPAPER DCS APL for process automation
- Integrated engineering in COMOS with SIPAPER control module types including blocks, diagrams, manipulated variables and messages
- Efficient plant optimization with automatic control loop analysis through CPA (Control Performance Analytics)
- SIPAPER Extended Lifecycle Service over a contract period of up to 15 years including upgrades for SIPAPER DCS/QCS/ Drives/Winder APL and SIMATIC PCS 7

Function



The SIPAPER DCS APL library consists of a comprehensive palette of tested blocks and preconfigured typicals with corresponding symbols and faceplates. Easy to configure and completely documented, the library ensures a high level of engineering quality and results in significantly shorter times during the construction and engineering phase.

The latest library, SIPAPER DCS APL, builds on previous libraries, our long-term experience in the fiber industry and our interaction with customers and industry consultants. It meets the standard specifications and offers visually appealing symbols and faceplates for easy navigation and user interaction.

A new version of SIPAPER DCS APL usually becomes available within four weeks of publication of a new SIMATIC PCS 7 version. Even though it was designed for the fiber industry, SIPAPER DCS APL is also used in other industries, such as water/wastewater and oil & gas.

Ordering data

How do you form the article number?

- Select the SIMATIC PCS 7 AS 410 bundle that best matches your solution from the ST PCS 7 catalog.
- Write down its Article No., e.g. **6ES7**654-6CQ03-3BF1
- Replace the first 4 digits of the article number with 6FT1, e.g. **6FT1**654-6CQ03-3BF1

SIMATIC PCS 7 is **not** included in the scope of delivery of the SIPAPER DCS APL AS bundle. If required, it must be ordered separately.

More information

Siemens AG
PD SLN FI PPM
Werner-von-Siemens-Str. 60
91052 Erlangen
Germany

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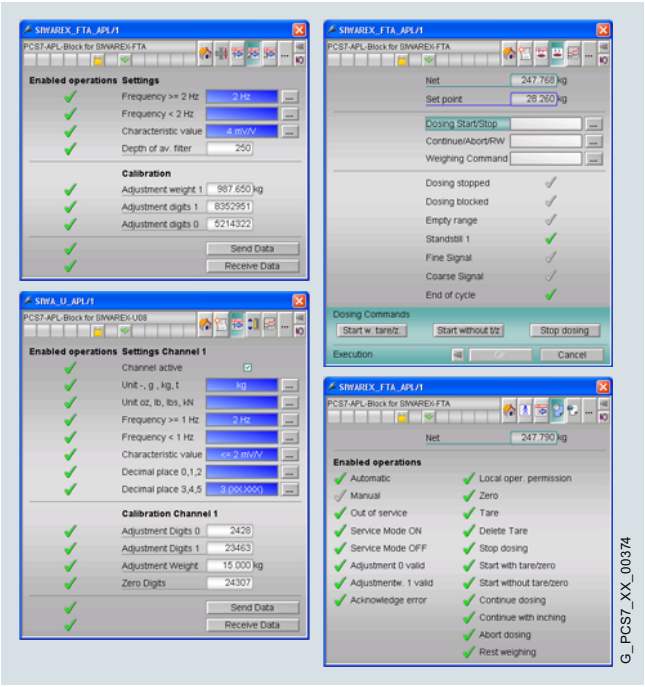
For further information, visit:
www.siemens.de/sipaper

Distributed I/O on PROFIBUS/PROFINET

5

Overview



Level, proportioning, belt, and loss-in-weight scales in process engineering applications can be quickly and efficiently configured using pre-configured weighing blocks. The uniform design of the SIWAREX weighing controllers matching that of SIMATIC ET 200M or ET 200SP also enables easy and consistent wiring in the control cabinet.

For the SIMATIC PCS 7 process control system, Siemens offers configuration packages with function blocks for the SIWAREX U, SIWAREX FTA, SIWAREX FTC and SIWAREX WP321 weighing controllers. These weighing blocks are suitable for both standard and fault-tolerant automation systems. In high-availability automation systems, the singularly installed SIWAREX U/FTA/FTC/WP321 can be accessed via both subsystems.

The weighing blocks supplied with the faceplate not only allow the rational integration of the SIWAREX U/FTA/FTC/WP321 weighing controllers into the engineering system, they also enable user-friendly operation and commissioning of the scales via the SIMATIC PCS 7 operator stations. Integrated signaling behavior and maintenance functions such as the reading or writing of all scale parameters ensure short standstill times and help to increase the availability.

The pixel-graphics engineering with the CFC editor is very clear and easy to use. The use of prepared blocks also eliminates possible sources of errors and reduces the configuration costs.

Note:

The function blocks and faceplates for weighing controllers can be used in combination with SIMATIC PCS 7 V8.x and V9.0 (depending on the version of the configuration package, with one or more of these versions; in the style of PCS 7 Standard Library or the PCS 7 Advanced Process Library). For details on this, see the following product overview.

Design

Product overview SIWAREX configuration packages for SIMATIC PCS 7 and the associated weighing controller

Configuration packages, variants	Associated hardware (SIWAREX weighing controller)	Article number	
SIWAREX U **(platform scales / level measurements)** • For SIMATIC PCS 7 V8.0 (as of Update 1), V8.1, V8.2 and V9.0, PCS 7 Advanced Process Library design • For SIMATIC PCS 7 V7.1, V8.0, V8.1 und V8.2, PCS 7 Standard Library design	SIWAREX U (1-channel), in design of ET 200M	7MH4950-1AA01	
	SIWAREX U (2-channel), in design of ET 200M	7MH4950-2AA01	
SIWAREX FTA **(automatic dosing and filling scales)** • For SIMATIC PCS 7 V8.0 (as of Update 1), V8.1, V8.2 and V9.0, PCS 7 Advanced Process Library design • For SIMATIC PCS 7 V7.1, V8.0, V8.1 und V8.2, PCS 7 Standard Library design	SIWAREX FTA, in design of ET 200M	7MH4900-2AA01	

Design (continued)

Configuration packages, variants	Associated hardware (SIWAREX weighing controller)	Article number	
SIWAREX FTC_B **(belt scales)** • For SIMATIC PCS 7 V8.0 (as of Update 1), V8.1, V8.2 and V9.0, PCS 7 Advanced Process Library design • For SIMATIC PCS 7 V7.1, V8.0, V8.1 und V8.2, PCS 7 Standard Library design	SIWAREX FTC, with ET 200M design	7MH4900-3AA01	
SIWAREX FTC_L **(loss-in-weight scales)** • For SIMATIC PCS 7 V7.1, V8.0, V8.1, V8.2 and V9.0, PCS 7 Standard Library design	SIWAREX FTC, with ET 200M design	7MH4900-3AA01	
SIWAREX WP321 **(platform scales / level measurements)** • For SIMATIC PCS 7 V8.1, V8.2 and V9.0, PCS 7 Advanced Process Library design	SIWAREX WP321, in design of ET 200SP	7MH4138-6AA00-0BA0	

Ordering data

	Article No.
SIWAREX U	
SIWAREX U configuration package (platform weighing machine/ level measurement) Consisting of function block, face-plate and manual, 2 languages (English, German), engineering license for SIWAREX U, single license for 1 installation	
Engineering and runtime software, software class A	
Delivery package: Software and electronic documentation on CD, engineering license (certificate of license)	
• For SIMATIC PCS 7 V9.0 (in design of PCS 7 Advanced Process Library)	**7MH4950-3AK66**
• For SIMATIC PCS 7 V8.0 (as of Update 1), V8.1 and V8.2 (in design of PCS 7 Advanced Process Library)	**7MH4950-3AK65**
• For SIMATIC PCS 7 V8.0, V8.1 and V8.2 (in design of PCS 7 Standard Library)	**7MH4950-3AK62**
• For SIMATIC PCS 7 V7.1 (in the design of the PCS 7 Standard Library)	**7MH4950-3AK61**
Associated hardware (SIWAREX U weighing controller)	
• SIWAREX U (1-channel)[1)]	**7MH4950-1AA01**
• SIWAREX U (2-channel)[1)]	**7MH4950-2AA01**

	Article No.
SIWAREX FTA	
SIWAREX FTA configuration package (automatic dosing and filling scales) Consisting of function block, face-plate and manual, 2 languages (English, German), engineering license for SIWAREX FTA, single license for 1 installation	
Engineering and runtime software, software class A	
Delivery package: Software and electronic documentation on CD, engineering license (certificate of license)	
• For SIMATIC PCS 7 V9.0 (in design of PCS 7 Advanced Process Library)	**7MH4900-2AK66**
• For SIMATIC PCS 7 V8.0 (as of Update 1), V8.1 and V8.2 (in design of PCS 7 Advanced Process Library)	**7MH4900-2AK65**
• For SIMATIC PCS 7 V8.0, V8.1 and V8.2 (in design of PCS 7 Standard Library)	**7MH4900-2AK63**
• For SIMATIC PCS 7 V7.1 (in the design of the PCS 7 Standard Library)	**7MH4900-2AK62**
Associated hardware (SIWAREX FTA weighing controller)	
SIWAREX FTA[1)]	**7MH4900-2AA01**

Ordering data

	Article No.
SIWAREX FTC_B	
SIWAREX FTC_B configuration package (belt scales) Consisting of function block, faceplate and manual, 2 languages (English, German), engineering license for SIWAREX FTC, single license for 1 installation	
Engineering and runtime software, software class A	
Delivery package: Software and electronic documentation on CD, engineering license (certificate of license)	
• For SIMATIC PCS 7 V9.0 (in design of PCS 7 Advanced Process Library)	**7MH4900-3AK68**
• For SIMATIC PCS 7 V8.0 (as of Update 1), V8.1 and V8.2 (in design of PCS 7 Advanced Process Library)	**7MH4900-3AK67**
• For SIMATIC PCS 7 V8.0, V8.1 and V8.2 (with design of PCS 7 Standard Library)	**7MH4900-3AK65**
• For SIMATIC PCS 7 V7.1 (in the design of the PCS 7 Standard Library)	**7MH4900-3AK63**
Associated hardware (SIWAREX FTC weighing controller)	
SIWAREX FTC[1]	**7MH4900-3AA01**
SIWAREX FTC_L	
SIWAREX FTC_L configuration package (loss-in-weight scales) Consisting of function block, faceplate and manual, 2 languages (English, German), engineering license for SIWAREX FTC, single license for 1 installation	
Engineering and runtime software, software class A	
Delivery package: Software and electronic documentation on CD, engineering license (certificate of license)	
• For SIMATIC PCS 7 V9.0 (in PCS 7 Standard Library design)	**7MH4900-3AK69**
• For SIMATIC PCS 7 V8.0, V8.1 and V8.2 (with design of PCS 7 Standard Library)	**7MH4900-3AK66**
• For SIMATIC PCS 7 V7.1 (in the design of the PCS 7 Standard Library)	**7MH4900-3AK64**
Associated hardware (SIWAREX FTC weighing controller):	
SIWAREX FTC[1]	**7MH4900-3AA01**

	Article No.
SIWAREX WP321	
SIWAREX WP321 configuration package (platform weighing machine/level measurement) Consisting of function block, faceplate and manual, 2 languages (English, German), engineering license for SIWAREX WP321, single license for 1 installation	
Engineering and runtime software, software class A	
Delivery package: Software and electronic documentation on CD, engineering license (certificate of license)	
• For SIMATIC PCS 7 V9.0 (in design of PCS 7 Advanced Process Library)	**7MH4138-1AK62**
• For SIMATIC PCS 7 V8.1 and V8.2 (in design of PCS 7 Advanced Process Library)	**7MH4138-1AK61**
Associated hardware (SIWAREX WP321 weighing controller)	
SIWAREX WP321[1]	**7MH4138-6AA00-0BA0**

[1] For further accessories (earthing terminals, etc.), refer to the corresponding device manual!

More information

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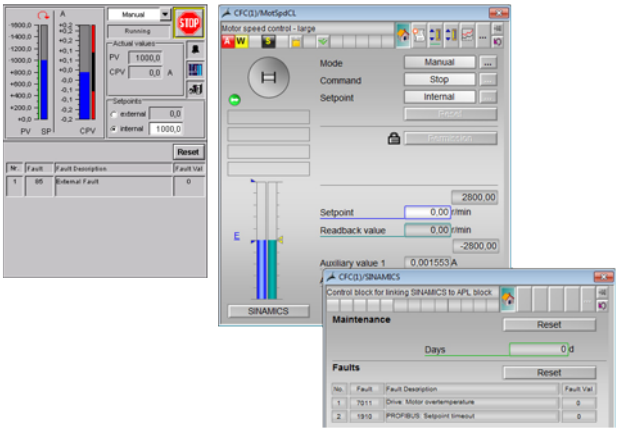
You can find additional information on the Internet at:
www.siemens.com/weighing-technology

Overview



Faceplates in classic style (left) and APL style (right)

Drive ES PCS 7 enables Siemens drives to be controlled via SIMATIC PCS 7 and operated and monitored in the operator station. The Drive ES PCS 7 faceplates make the data relevant to plant operation available on the operator station.

Drive ES PCS 7 also provides the drive data relevant to the PCS 7 Asset Management for display on the maintenance station.

The Drive ES Basic Maintenance configuration software[1)] or the STARTER commissioning software[1)] (as of V4.3 SP2) can also be used on the engineering station for configuration, commissioning and detailed diagnostics of the drive.

Note:

Drive ES PCS 7 is offered in the following versions:

- Drive ES PCS 7 APL with blocks in the design of the PCS 7 Advanced Process Library (APL style) in versions for SIMATIC PCS 7 V8.0, V8.1, V8.2 or V9.0
- Drive ES PCS 7 with blocks in the design of the PCS 7 Standard Library (classic style) in versions for SIMATIC PCS 7 V8.0, V8.1, V8.2 or V9.0

1) The STARTER commissioning software (as of V4.3 SP2) must be used for MICROMASTER (4th generation) and SINAMICS drives; Drive ES Basic Maintenance for all other Siemens drive systems.

Application

Drive ES PCS 7 can integrate the following drive series into SIMATIC PCS 7:

- SIMOVERT MASTERDRIVES VC and MC[1)]
- MICROMASTER 3rd generation[1)]
- MICROMASTER 4th generation
- SIMOREG DC Master[1)]
- SINAMICS S110/S120/S150
- SINAMICS G120
- SINAMICS G130/G150
- SINAMICS MV (product designations GM150, GL150, SL150, SM120)
- SINAMICS DC MASTER (SINAMICS DCM)
- SINAMICS DCP (bidirectional DC/DC actuator)

1) Only the library in the classic style is available for these drives.

As of Drive ES PCS 7 APL V8.0+SP1 or Drive ES PCS 7 V8.0+SP1 (classic), SINAMICS drives can be integrated on PROFINET in SIMATIC PCS 7 in addition to drives on PROFIBUS DP.

You can find a detailed list of the drives supported with Drive ES PCS 7 V8.2 and V9.0 on the Internet for:

- Drive ES PCS 7 APL V8.2
  https://support.industry.siemens.com/cs/ww/de/view/109739002
- Drive ES PCS 7 V8.2 (classic)
  https://support.industry.siemens.com/cs/ww/de/view/109738265
- Drive ES PCS 7 APL V9.0
  https://support.industry.siemens.com/cs/ww/de/view/109750294
- Drive ES PCS 7 V9.0 (classic)
  https://support.industry.siemens.com/cs/ww/de/view/109750829

You can find detailed information on the drives supported by Drive ES PCS 7 predecessor versions in the respective product notifications in the Product Support section of Industry Online Support on the Internet:
https://support.industry.siemens.com

MICROMASTER

MICROMASTER inverters are standard frequency inverters in the power range from 0.12 to 250 kW and can be used in numerous variable-speed drive applications. They are especially suitable for applications with pumps, fans and in conveyor systems. Their large range of line voltages enables them to be used all over the world.

Application (continued)

SINAMICS

SINAMICS is the latest family of drives from Siemens for innovative and future-proof drive solutions in a wide performance range from 0.12 to 4 500 kW with line voltages from 380 to 690 V. Characteristic of the devices from the SINAMICS family, which are based on a shared platform concept, is their integrated functionality, high degree of flexibility, and facility for combination.

SINAMICS S

The SINAMICS S120 drive system is a modular system for high-performance applications in industrial machine construction and plant engineering. A wide range of matched designs, components and functions always enables you to find an optimum solution. SINAMICS S120 can be used to implement powerful single drives and coordinated drives (multi-axis applications) with vector or servo functionality.

SINAMICS S150 are designed as cabinet units for variable-speed drives in machine construction and plant engineering. They are particularly suitable for variable-speed drives with high requirements placed on dynamic response and speed accuracy, frequent braking cycles with high braking energies, and four-quadrant operation.

SINAMICS G

SINAMICS G single drives (AC/AC converters) are specialists for all applications where solid, liquid or gaseous materials have to be moved, transported, pumped or compressed through the use of conveyor belts, pumps, fans and compressors.

The product range of universally deployable SINAMICS G120 single drives includes:

- Compact G120C single drives for the low performance range (0.55 to 18.5 kW)
- Modular G120 single drives for the low to medium performance range (0.37 to 250 kW)

SINAMICS G130 built-in units and SINAMICS G150 cabinet units for powers from 75 to 2 700 kW round off the top performance range.

SINAMICS MV

SINAMICS MV is an integrated range of medium-voltage converters which is unique worldwide and covers all levels of dynamics and performance in voltage classes from 2.3 to 11 kV. These SINAMICS MV drives cover a performance range from 0.8 kW to 85 MW at motor speeds of 10 to 15 000 rpm^{-1}. They can be used for single drives as well as for multi-motor drives.

SINAMICS DC MASTER

SINAMICS DC MASTER (SINAMICS DCM) is the name for the latest generation of DC converters from Siemens.
The SINAMICS DCM DC power converters combine the advantages of the previous generation, SIMOREG DC MASTER, with those of the SINAMICS series and serve the performance range from 6 kW to 3 MW.

SINAMICS DCM can be optimally integrated in any plants with the following device versions:

- SINAMICS DCM DC Converters, the universal built-in unit
- SINAMICS DCM Control Module for the modernization of existing plants, particularly for extremely high performances
- SINAMICS DCM Cabinet, the ready-to-connect and ready-to-run drive cabinet for all DC drive technology applications

SINAMICS DCP (bidirectional DC/DC actuator)

The name SINAMICS DC Power Converter (SINAMICS DCP) represents a new generation of bi-directional DC/DC actuators from Siemens, which combines extensive expertise of DC technology with the advantages of the SINAMICS product series.

Typical applications and areas of application:

- Braking chopper
- Coupling of DC busses with different levels of voltage
- Battery check status
- Mining conveyor belts
- BESS (Battery Energy Storage Systems)
- Wind energy and photovoltaics

Ordering data	Article No.
Drive ES PCS 7 in the design of the PCS 7 Advanced Process Library (APL Style)	
Drive ES PCS 7 APL[1] Function blocks and faceplates in the style of the PCS 7 Advanced Process Library (APL) for integration of variable-speed drives in SIMATIC PCS 7, for example, SINAMICS, SINAMICS DCM, SINAMICS DCP, SINAMICS MV, SINAMICS S/G and MICROMASTER 4xx	
with electronic documentation (5 languages); single license for one engineering station each, consisting of: • Engineering license for one engineering station • Runtime license for one automation system	
Engineering and runtime software, software class A, 5 languages (English, German, French, Italian, Spanish), single license for 1 installation	
Delivery package: Certificates of license; software and electronic documentation on CD	
• **V9.0 incl. SP**[2] **for SIMATIC PCS 7 V9.0** Runs on Windows 7 SP1 Enterprise/Ultimate/Professional 64-bit, Windows 10 Enterprise LTSB 2015 64-bit, Windows Server 2008 R2 SP1 Standard 64-bit, Windows Server 2012 R2 Standard Edition 64-bit or Windows Server 2016 Standard 64-bit	**6SW1700-1JD01-0AA0**
• **V8.2 incl. SP**[2] **for SIMATIC PCS 7 V8.2** Runs on Windows 7 SP1 Enterprise/Ultimate 32-bit, Windows 7 SP1 Enterprise/Ultimate/Professional 64-bit, Windows Server 2008 R2 SP1 Standard 64-bit, Windows Server 2012 R2 Standard Edition 64-bit or Windows Server 2016 Standard 64-bit Only for OS component of the library on the OS client: Windows 10 Enterprise 2015 LTSB 64-bit	**6SW1700-8JD01-2AA0**
• **V8.1 incl. SP**[2] **for SIMATIC PCS 7 V8.1** Runs on Windows 7 SP1 Enterprise/Ultimate 32/64-bit, Windows Server 2008 R2 SP1 Standard 64-bit	**6SW1700-8JD01-1AA0**
• **V8.0 incl. SP**[2] **for SIMATIC PCS 7 V8.0** Runs on Windows XP Professional SP3 32-bit, Windows Server 2003/ 2003 R2 Standard 32-bit, Windows 7 Enterprise/Ultimate SP1 32/64-bit, Windows Server 2008 SP2 Standard 32-bit or Windows Server 2008 R2 SP1 Standard 64-bit	**6SW1700-8JD01-0AA0**

Ordering data	Article No.
Drive ES PCS 7 in the design of the PCS 7 Standard Library (classic)	
Drive ES PCS 7 (classic) Function blocks and faceplates in the style of the PCS 7 Standard Library for integration of variable-speed drives in SIMATIC PCS 7, for example, SIMOVERT MASTERDRIVES, MICROMASTER 4xx, SIMOREG DC MASTER, SINAMICS DCM, SINAMICS DCP; SINAMICS MV and SINAMICS S/G	
with electronic documentation (5 languages); single license for one engineering station each, consisting of: • Engineering license for one engineering station • Runtime license for one automation system	
Engineering and runtime software, software class A, 5 languages (English, German, French, Italian, Spanish), single license for 1 installation	
Delivery package: Certificates of license; software and electronic documentation on CD	
• **V9.0 incl. SP**[2] **for SIMATIC PCS 7 V9.0** Runs on Windows 7 SP1 Enterprise/Ultimate/Professional 64-bit, Windows 10 Enterprise LTSB 2015 64-bit, Windows Server 2008 R2 SP1 Standard 64-bit, Windows Server 2012 R2 Standard Edition 64-bit or Windows Server 2016 Standard 64-bit	**6SW1700-1JD00-0AA0**
• **V8.2 incl. SP**[2] **for SIMATIC PCS 7 V8.2** Runs on Windows 7 SP1 Enterprise/Ultimate 32-bit, Windows 7 SP1 Enterprise/Ultimate/Professional 64-bit, Windows Server 2008 R2 SP1 Standard 64-bit, Windows Server 2012 R2 Standard Edition 64-bit or Windows Server 2016 Standard 64-bit Only for OS component of the library on the OS client: Windows 10 Enterprise 2015 LTSB 64-bit	**6SW1700-8JD00-2AA0**
• **V8.1 incl. SP**[2] **for SIMATIC PCS 7 V8.1** Runs on Windows 7 SP1 Enterprise/Ultimate 32/64-bit, Windows Server 2008 R2 SP1 Standard 64-bit	**6SW1700-8JD00-1AA0**
• **V8.0 incl. SP**[2] **for SIMATIC PCS 7 V8.0** Runs on Windows XP Professional SP3 32-bit, Windows Server 2003/ 2003 R2 Standard 32-bit, Windows 7 Enterprise/Ultimate SP1 32/64-bit, Windows Server 2008 SP2 Standard 32-bit or Windows Server 2008 R2 SP1 Standard 64-bit	**6SW1700-8JD00-0AA0**

Ordering data

	Article No.
AS runtime license Drive ES PCS 7	
AS runtime license Drive ES PCS 7 for SIMATIC PCS 7 V8.0, V8.1, V8.2 and V9.0 For processing of function blocks in an automation system language-neutral, single license for 1 installation Delivery package: Certificate of License	**6SW1700-5JD00-1AC0**
Drive ES Basic Maintenance configuration software	
Drive ES Basic Maintenance Software package for easy parameterization, commissioning and diagnostics of existing Siemens drives that are not supported by STARTER using a central engineering station, including routing beyond network boundaries; with electronic documentation (5 languages) Engineering software, software class A, 5 languages (English, German, French, Italian, Spanish) Delivery package: Certificate of License; software and electronic documentation on DVD	
• V5.6 including SP[2)4)] For SIMATIC PCS 7 V8.0, V8.1, V8.2 and V9.0, single license (floating license for 1 user) Note: This TIA functionality is provided with the STARTER commissioning tool (V4.3.2 and higher) for SINAMICS and MICROMASTER 4 drives.	**6SW1700-5JA00-6AA0**
Upgrades and software update service	
Drive ES PCS 7 APL upgrade[2)] For single license Engineering and runtime software, software class A 5 languages (English, German, French, Italian, Spanish), single license for 1 installation Delivery package: Software and electronic documentation on CD	
• **V8.0/V8.1/V8.2 to V9.0**[2)4)] And when upgrading from Drive ES PCS 7 (classic) to Drive ES PCS 7 APL version[3)]	**6SW1700-1JD01-0AA4**
• **V8.0/V8.1 to V8.2**[2)4)] And when upgrading from Drive ES PCS 7 (classic) to Drive ES PCS 7 APL version[3)]	**6SW1700-8JD01-2AA4**
• **V8.0/V8.0 including SP to V8.1**[2)4)] And when upgrading from Drive ES PCS 7 (classic) to Drive ES PCS 7 APL version[3)]	**6SW1700-8JD01-1AA4**
• **V8.0 to V8.0 SP1**[2)4)] And when upgrading from Drive ES PCS 7 (classic) to Drive ES PCS 7 APL version[3)]	**6SW1700-8JD01-0AA4**
Drive ES PCS 7 upgrade (classic style) For single license Engineering and runtime software, software class A, 5 languages (English, German, French, Italian, Spanish), single license for 1 installation Delivery package: Software and electronic documentation on CD	
• V6.x/V7.x/V8.0/8.1/V8.2 to V9.0[2)4)]	**6SW1700-1JD00-0AA4**
• V6.x/V7.x/V8.0/8.1 to V8.2[2)4)]	**6SW1700-8JD00-2AA4**
• V6.x/V7.x/V8.0 to V8.1[2)4)]	**6SW1700-8JD00-1AA4**
• V6.x/V7.x to V8.0[2)4)]	**6SW1700-8JD00-0AA4**
Software update service Contract for the delivery of all updates/upgrades for 1 year; if not canceled, the contract is automatically extended for one more year Delivery package: Written contract	
• Drive ES PCS 7 APL, single license (for 1 installation) for Drive ES PCS 7 in the design of the PCS 7 Advanced Process Library (APL)	**6SW1700-0JD01-0AB2**
• Drive ES PCS 7 (classic), single license (for 1 installation)	**6SW1700-0JD00-0AB2**

[1)] For Drive ES PCS 7 APL as of V9.0 SPx and higher, a trial version is available in the Siemens Industry Online Support, see https://support.industry.siemens.com/cs/ww/de/view/109756809

[2)] The most recent update/service pack (SP) is always supplied.

[3)] When upgrading from Drive ES PCS 7 (classic) to Drive ES PCS 7 APL, the SIMATIC PCS 7 user software must be reconfigured.

[4)] You can find information on the supported operating systems in the product notifications for the respective versions of Drive ES PCS 7, Drive ES PCS 7 APL or Drive ES Basic Maintenance in the Product Support section of the Industry Online Support on the Internet, see https://support.industry.siemens.com

More information

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Product Management Drives

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You can also find the latest product information, FAQs and manuals at Product Support for Industry Online Support on the Internet (https://support.industry.siemens.com) under "Drive technology – Selection and engineering tools – DRIVE ES configuration software or STARTER commissioning software"

For further information, visit:
www.siemens.com/drive-es

Overview

The **F**ront **E**nd **M**odule AddFEM is an autonomous unit for the input/output of analog and digital process signals that can be connected with standardized protocols via the PROFIBUS DP fieldbus to the SIMATIC PCS 7 automation system. Its fast response times for signal acquisition and processing should be particularly emphasized.

The product range consists of two versions:

- AddFEM
  - 12 analog inputs
  - 8 analog outputs
  - 12 digital inputs
  - 16 digital outputs (can also be configured as digital inputs)
  - 3 counter/timer inputs (can also be configured as digital inputs)
- AddFEM SoE (Sequence of Event) with a preprocessing Front End Function (FEF)
  - 31 digital inputs with highly exact time tagging.

Both product versions can be operated in redundant pairs. The advantage of AddFEM redundancy is that the switchover in this case takes place independent of the automation system (CPU).

Note:

The AddFEM can be used in combination with SIMATIC PCS 7 V8.0 as of Update 1, V8.1, V8.2 and V9.0.

Benefits

- Modules for operation independently or redundant in pairs
- Fast response times for signal acquisition and processing as well as for redundancy switchover (switchover time less than 500 µs) of the AddFEM
- Extended level ranges for analog signals and counters of the AddFEM
- Analog and digital areas electrically isolated from one another
- Permanently short-circuit-proof analog and digital inputs
- Monitoring of all outputs
- Outputs can be connected in parallel with other outputs (redundancy, increase in performance)

Design

Built into a rugged high-grade steel housing, which is in line with the SIMATIC S7 design in terms of dimensions and shape, the AddFEM meets stringent environmental requirements. It is prepared for mounting on DIN rails and for direct mounting with bolts. These installation options support both freestanding construction and installation in cabinets or wall-mounted housings.

The connecting elements are protected by a removable hood on which the connector pin assignment of the I/O signals is printed. The functions are set by means of two mode selectors and indicated by 12 LEDs. In accordance with the PLC standard, 2 x 16 LEDs are available in the display panel of the module for signaling the binary I/O signals.

Function

AddFEM

The various signal types with AddFEM are distributed across the process connections in such a way that a single module is often sufficient for small applications. Applications with a large quantity framework can be implemented by using several modules.

The measuring ranges of the analog inputs and outputs are designed so that no additional signal transducers have to be used. By means of an additional current range of ± 50 mA for the analog outputs, actuators with higher power requirements, e.g. fuel control valves, can also be controlled without additional signal amplifiers.

AddFEM SoE (Sequence of Event) with a preprocessing Front End Function (FEF)

The Front End Module AddFEM SoE is tailored to the special applications in power plant and process control technology where exact time tagging is required when recording changes in signals, e.g. for archiving the statuses of a power plant for analysis of incidents or for general logging.

The AddFEM is synchronized by the GPS time server, and tags the binary signals with an accuracy of 1 ms.

The integrated redundancy in 3 levels and the fast, stand-alone switching over guarantee high availability. The module communicates with the automation system over the redundant PROFIBUS DP.

The AddFEM SoE requires the AddFEM SoE repeater module for on-site signal distribution, adaptation of the medium (glass FOC to plastic FOC) and signal inversion.

Function (continued)

AddFEM SoE repeater module

The SoE repeater module can be extended by up to 5 SoE repeater extension modules, and forms a unit together with these.

Since the SoE repeater module can be cascaded, up to 5 of such units can be connected in series.

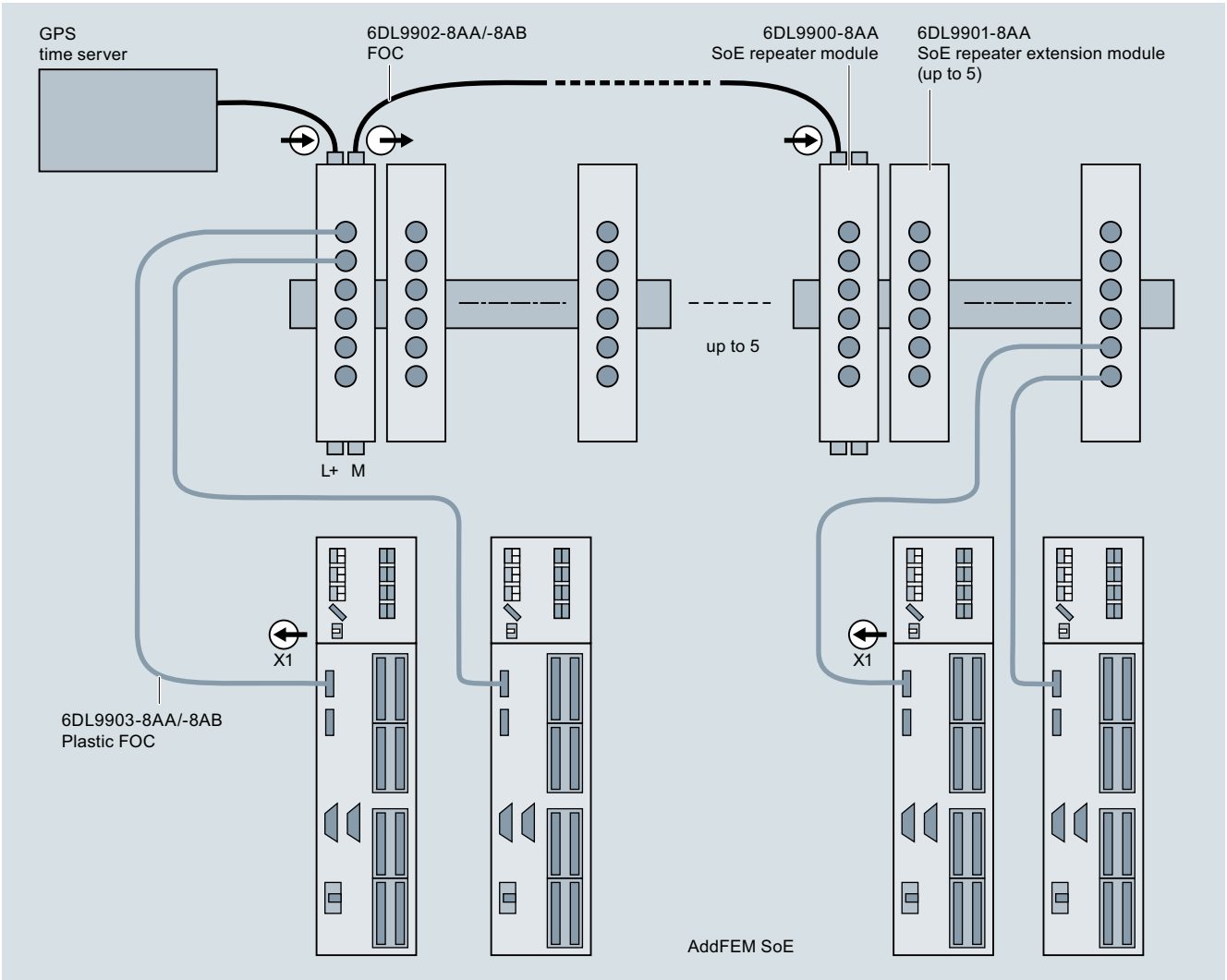
SoE repeater module and SoE repeater extension module have no intelligence whatsoever. The logic of the input signal is inverted without changing its timing and connected to the outputs.

Up to 6 AddFEM SoE modules can be connected via plastic FOCs to each module. The service interface X1 present on the AddFEM SoE (see graphic) is used as the signal input.

Large distances have to be covered between the GPS time server and the AddFEM SoE. Therefore glass FOCs are used as the transmission medium between the GPS time server and the SoE repeater module.

SoE repeater module, SoE repeater extension module and AddFEM SoE are mounted together in the electronics cabinet. The SoE repeaters are mounted on a rail TH 35 – 7.5 EN 60 715 or TH 35 – 15 EN 60 715.

The SoE repeater module is powered with 24 V DC. It supplies the SoE repeater extension module of the unit via a rail bus connector.



Technical specifications

AddFEM/AddFEM SoE	
General data	
Dimensions (W × H × D) in mm	295 × 75 × 209
Weight	2.8 kg
Supply voltage	24 V DC
Bridging of power failures	10 ms (minimum)
Power consumption	20 W
PROFIBUS DP interfaces	
Number of interfaces	2
Baud rate	12 Mbit/s
Max. cable length of a segment	100 m
Connectable load per interface	5 V, max. 80 mA
Digital inputs	
Quantity	12
Type of input	Type 1 compliant with IEC 1131-2
Voltage range	-30 … +33 V DC
0 signal level	-30 … +5 V DC
1 signal level	+11 … +30 V DC
Galvanic isolation	3 groups with 4 digital inputs each
Display	LED in display panel
Digital outputs	
Quantity	16
Type of output	Digital semiconductor outputs
Nominal output voltage	24 V DC
Output voltage with 0 signal	< 1 V
Output voltage with 1 signal	Power supply less 2 V
Rated output current	500 mA
Short-circuit proof	Yes
Short-circuit-to-ground monitoring	Yes (internal monitoring)
Galvanic isolation	Yes (8 outputs each with same reference potential)

Analog inputs (parameterizable)	
Inputs, total	12
Current input (fixed)	6
Current/voltage input	6
Measurement range of currents inputs (parameterizable)	0 … 20 mA 4 … 20 mA -20 … +20 mA -30 … +30 mA
Measuring range of voltage input (parameterizable)	0 … 10 V -10 … +10 V
Input impedance, current	41.8 Ω
Input impedance, voltage	100 kΩ
Max. error (over the entire temperature range)	0.2% relative to full-scale value
Resolution of A/D converter	13 bit + sign
Conversion method	Successive approximation
Analog outputs (parameterizable)	
Outputs, total	8
Current output range	0 … 20 mA (480 Ω) 4 … 20 mA (480 Ω) ± 20 mA (480 Ω) ± 30 mA (300 Ω) ± 50 mA (150 Ω)
Max. error (over the entire temperature range)	0.4%
Resolution of A/D converter	13 bit + sign
Counting pulse input (parameterizable)	
Number of inputs	3
Type of input	Type 1/2 compliant with IEC 1131-2
Voltage range	±33 V DC
0 signal level	-28 … +3 V
1 signal level	+8 … +28 V
Load	1 … 3 kΩ
Input frequency (f_{in})	0 … 20 kHz
Counter resolution	1/60 000 referred to measured value
Updating interval	2 ms
Digital inputs with time tagging: AddFEM SoE	
Quantity	31
Time resolution	1 ms
Approvals/markings	
UL Recognition Mark	Underwriters Laboratories (UL) compliant with Standard UL 508 File E 85972
CSA Certification Mark	Canadian Standard Association (CSA to Standard C22.2 No. 142 File LR 63533)
CE marking	Compliant with EU directive 2004/108/EG "Electromagnetic compatibility"
Quality assurance	According to ISO 9001

Ordering data

	Article No.
Front End Modules	
Front End Module AddFEM Redundant PROFIBUS DP I/O module for fast response times	**6DL3100-8AC**
Front End Module AddFEM SoE Redundant PROFIBUS DP I/O module for high-precision time stamping	**6DL3100-8AC03**

	Article No.
Accessories	
Connection elements for AddFEM	
• Plug set with screw-type terminals	**6DL9900-8AA**
• Plug set with spring-loaded terminals	**6DL9900-8AB**
Redundant connection Fiber-optic cable 1.6 m	**6DL9901-8AA**
SoE repeater module 6 channels	**6DL9200-8AA**
SoE repeater extension module 6 channels	**6DL9201-8AA**
Cable between time server and SoE repeater Glass FOC, length:	
• 15 m	**6DL9902-8AA**
• 25 m	**6DL9902-8AB**
Cable between SoE repeater and AddFEM SoE Plastic FOC, length:	
• 1.5 m	**6DL9903-8AA**
• 2.5 m	**6DL9903-8AB**

5

More information

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Systems Engineering
Fürth, Germany

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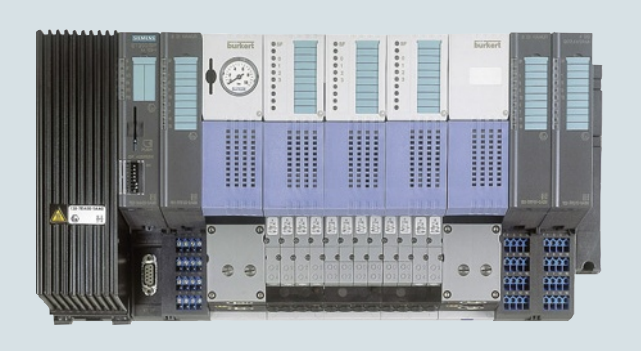
Overview



AirLINE Ex 8650 is a pneumatic valve block specially developed for the ET 200iSP distributed I/O system of SIMATIC PCS 7, and is used to control process and production sequences in hazardous areas of Zone 1/21. Through integration of the pneumatic valve block into the ET 200iSP station, the latter's electric I/O functions are expanded by pneumatic 3/2-way or 5/2-way control functions.

Pneumatic functions reduce the costs for wiring and the associated documentation. They save space, simplify the proof of intrinsic safety, and have a favorable effect on the power loss and the associated self-heating.

Typical fields of application can be found in process and production automation associated with biotechnology and in the pharmaceutical and chemical industries.

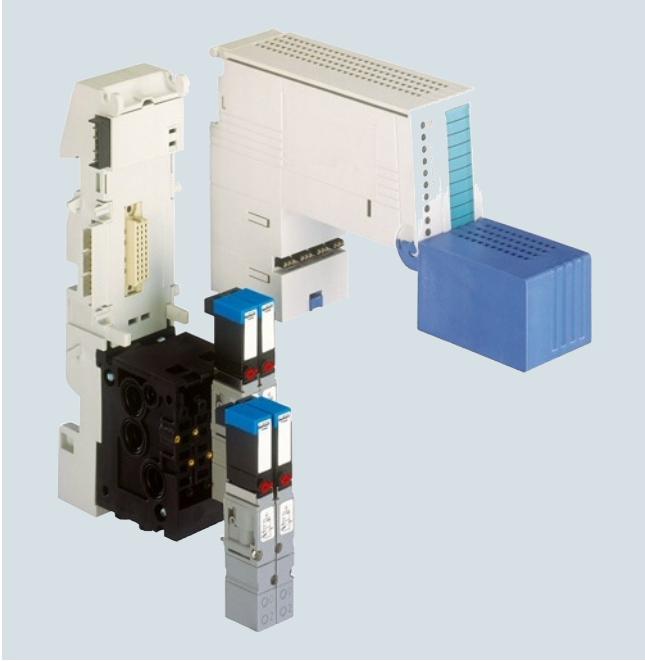
Note:

As an integral component of the ET 200iSP, the AirLINE Ex 8650 pneumatic valve block can be used in combination with SIMATIC PCS 7 V8.x. Operation with SIMATIC PCS 7 V9.0 is being developed. It is linked using the IM 152-1 interface module of the ET 200iSP station. It is supported by means of the Generic Station Description (GSD), the Electronic Device Description (EDD) and the Hardware Support Package (HSP).

Design

In the context of the AirLINE Ex 8650 pneumatic valve block, every assembly comprising terminal module, function module and pneumatic module is referred to as "slice".

A valve slice comprises the terminal module with the permanent wiring, equipped with an electronic basic module and a pneumatic basic module. The valves are then mounted on the basic module.



Design of a valve slice (terminal module on left, electronic basic module at top, pneumatic basic module at bottom, valves)

The valves and their electronic modules have intrinsically safe design (Ex i). For servicing purposes, they can be replaced during ongoing operation. They are easy to install and remove from the front.

The AirLINE Ex 8650 pneumatic valve block is supplied with compressed air via pneumatic connection washers, and the exhaust air is also discharged in this manner. A connection washer on each side terminates the pneumatic backplane on the left and right to the modules of the ET 200iSP. Valve slices for the two available air supplies of 300 l/min and 700 l/min can be mixed in between as desired.

Depending on the configuration, smaller supply elements can be produced using further pneumatic connection washers for intermediate supply. In this way it is possible to work with different pressures or to completely depressurized certain areas of the valve terminal in safety-related applications.

Bürkert Fluid Control Systems can help you with the selection and combination of components. For your individual configuration, you get:

- Documentation
- Materials list
- Dimensions
- Various diagrams

Function

The AirLINE Ex 8650 pneumatic valve block can be used to implement 3/2-way and 5/2-way functions for controlling process valves, single-action or double-action pneumatic cylinders, linear or rotary actuators, etc. The valve slices for air supplies of 300 l/min or 700 l/min act like digital output modules. They convert the electric control signals of the interface module into pneumatic output signals.

The valves themselves have a low power consumption and permit high pressures to be switched with short switching times. They are optionally available with or without manual emergency actuation. Versions are also available with a separate auxiliary control air supply for use in an extended pressure range or with a non-return valve for venting connections. The configuration can be individually adapted using optional baffle elements or pressure shut-offs.

The valve output modules provide up to 8 channels. This means up to 128 valve functions can be configured per station depending on the types of valve used.

The electronics modules of the valve slices display the modules status (group fault display) and the channel status (channel open/closed) on LEDs. Status, diagnostics and switching cycle counters of the channels can be read out via PROFIBUS.

Technical specifications

AirLINE Ex	
Max. number of valve functions	128 (depending on valve type)
Max. width of complete station	1 185 mm
Rated flow	300 l/min or 700 l/min
Pressure range	0 … 8 bar
Ambient temperature in operation • Horizontal installation • All other mounting positions	 0 … 55 °C 0 … 50 °C
Ambient temperature during storage	-40 … +70 °C
Degree of protection	IP30
Approvals	ATEX, IEC, II 2G Ex ia/ib IIC T4

More information

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Germany

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Fax: +49 7940 10-91204

Email: info@burkert.com

For further information, visit:
www.buerkert.de

Information on AirLine Ex type 8650:
www.buerkert.de/de/type/8650

Overview

Radio Frequency Identification (RFID) systems for contactless identification and localization of products as well as for automatic recording and storage of data have already been tried and tested in numerous manners for automation technology. Such systems use mobile data carriers (transponders/tags) to identify products, and readers to monitor the data in the transponders.

SIMATIC Ident RFID systems from Siemens enable you to perfectly control and optimize the material flow and the complete logistics sequence. The systems are also highly suitable for container management and asset management.

Note:

The SIMATIC Ident identification systems can be used in combination with SIMATIC PCS 7 V8.x and V9.0.

Design

The SIMATIC Ident RFID systems consist of matched individual components, the function and performance of which vary depending on the task:

- Mobile data carriers (transponders/tags)
- Read/write devices (readers) and mobile handheld terminals
- Antennas
- Communication modules for connection to the automation system
- Software for system integration

Integration of the SIMATIC Ident RFID systems into the SIMATIC PCS 7 process control system is possible in a variety of ways. The RFID readers of the RF200, RF300, RF600, MOBY D systems are linked with the process control system using RF180C, ASM 456 and ASM 475/ET 200M communication modules.

RF180C, ASM 456 and ASM 475/ET 200M communicate via PROFINET or PROFIBUS with the SIMATIC PCS 7 automation system.

Function

SIMATIC Ident RFID systems with a tag memory of up to 64 KB can be configured in a wide variety of ways. Application examples with a CFC block and with a RFID faceplate provide you with effective support. It is available for download on the Internet:

https://support.industry.siemens.com/cs/ww/de/view/29351305

In order to utilize the full functionality of the RFID system for SIMATIC PCS 7, these examples can be changed or extended as required. A customized CFC block can also be created by direct adaptation of the function blocks FB 45 or the Ident profile.

Ordering data

	Article No.
RF180C communications module for connecting two readers directly to PROFINET	**6GT2002-0JD00**
ASM 456 communications module for connecting two readers directly to PROFIBUS	**6GT2002-0ED00**
ASM 475 communication module for SIMATIC S7-300 and ET 200M; for connecting two readers	**6GT2002-0GA10**
RFID Systems Software & Documentation with FB for SIMATIC/SIMATIC PCS 7, application example and RFID documentation in multiple languages	**6GT2080-2AA20**

More information

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Communication and Identification
Nuremberg, Germany

Phone: +49 (911) 895-2905

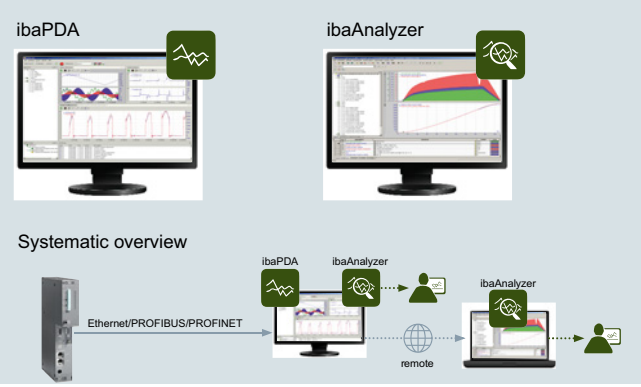
email: presales.ci.industry@siemens.com

For further information, visit:
www.siemens.de/rfid

Notes

Diagnostics

Overview



Process control systems usually feature integrated measured value acquisition (trending) with relatively slow cycle times of 500 ms or more. In addition, examination of the collected data for troubleshooting and process analysis is often insufficiently supported in trending. However, high-cycle, ideally cycle-precise, continuous recording of measured values is required to detect sporadic disturbances and programming errors in the CPUs. A convenient measured data acquisition system is provided by ibaPDA . The measured data collected in this way can be subsequently analyzed offline with the high-performance ibaAnalyzer.

ibaPDA

ibaPDA is a software package for measured data acquisition on a separate recording computer (PC). This measured data acquisition system offers various options for high-cycle acquisition of data from the SIMATIC world, e.g.

- Cycle-precise coupling of data via bus monitors, e.g. ibaBM-DP (PROFIBUS bus monitor), ibaBM-PN (PROFINET bus monitor) or via CP 1616 (PROFINET connection)
- Software-based interfaces, e.g. OPC UA, **ibaPDA-Interface-PLC-Xplorer** for communication with the CPUs of the automation systems via MPI, CP/PG or Ethernet TCP/IP interface

Due to the various interfaces to a wide variety of automation and bus systems, higher-level data acquisition with uniform acquisition time can also be realized in systems with heterogeneous automation technology.

Using a recording computer, digital and/or analog signals can be recorded at rate down to 1 ms, or even down to 10 µs when the appropriate hardware is used.

On the recording computer, the measured data can be accessed and selected online with **ibaPDA-Request-S7** without having to re-program or shut down the CPU of the automation system.

ibaAnalyzer

The signals recorded centrally with ibaPDA are stored in files and can be analyzed from any number of workstations using the freeibaAnalyzer software package.

The supplementary **ibaAnalyzer-DB** package permits the user-friendly further processing of the recorded data with database support. Recorded data can be written to various databases (e.g. Microsoft SQL Server, Microsoft Access, Oracle) and read again according to selectable query criteria.

Note:

ibaPDA and ibaAnalyzer can be used in combination with SIMATIC PCS 7 V8.x and V9.0.

Function

ibaPDA

- Simple user interface with online signal visualization
- Client-Server architecture with multiple clients
- Client can be integrated in the OS visualization via ActiveX based on the .NET compatibility
- Numerous display options for measured data e.g. trend, oscilloscope, FFT, digital meter
- Central configuration dialog with flexible modular structure and integrated online diagnostics
- OPC DA/UA server and OPC DA/UA client functionality integrated
- Virtual signals (formula editor)
- Signal groups
- Technostrings for recording asynchronous, non-cyclic data, e.g. batch numbers, setpoints
- Combination with ibaCapture CAM/HMI for synchronous acquisition of camera images and HMI screen data
- Staggered licensing model based on the number of detectable signals (64, 256, 1024, 2048, unlimited)
- Several recordings in parallel (expandable)
- Complex trigger conditions for data recording
- Recording with ibaHD server as an endless strip chart recorder
- Digital output signals (alarm messages) also per TCP/IP
- E-mail notifications
- Time synchronization via DCF77, PTP (IEEE 1588), IEC 1131
- Synchronized multi-station operation with several ibaPDA systems

ibaAnalyzer

- Graphic user interface with intuitive operation
- Automatic scaling
- Report generator for automatic generation of graphic and tabular reports in various formats (PDF, HTML etc.)
- Powerful mathematical formulae and operations
- Views: Y/T, X/Y, FFT, Y/length, 2D plan, 3D false colors and 3D grid
- Mathematically generated "virtual signals"
- Graphical digital filter editor
- Data export in ASCII format
- Automatic presentation of measurement files (slide show)
- Generation of analysis guidelines for use on several measurement files
- Combination of signals on a shared scale or on different scales
- Simultaneous consideration of analog and digital signals
- Simple measurement of signals
- X/Y zoom, infinitely variable
- Special functions for length representations

Function (continued)

ibaAnalyzer-DB

- Data extraction of time-based and/or length-based measurement segments via ODBC in a database (e.g. Microsoft SQL Server, Microsoft Access, Oracle)
- Database query wizard (Query Builder)
- Database analysis with full scope of ibaAnalyzer instructions

ibaPDA-Request-S7

- Modifying the measurement data to be recorded without making changes on the CPU
- ibaPDA integration via PROFIBUS DP slaves or PROFINET devices with the bus monitors ibaBM-DP or ibaBM-PN
- Optional online access to all operands of the S7-CPUs
- Cycle-precise acquisition of measurement data

ibaPDA-Interface-PLC-Xplorer

- ibaPDA interface to the automation system's CPU via MPI, CP/PG or Ethernet TCP/IP
- Optional online access to all operands and symbols of the S7-CPUs
- Output of measured data via the selected communication connection (MPI, CP/PG or Ethernet TCP/IP)

Operating system platforms for all program packages

- Windows 7 32/64-bit
- Windows Server 2008
- Windows Server 2008 R2
- Windows 8 32/64-bit
- Windows 8.1 32/64-bit
- Windows Server 2012
- Windows Server 2012 R2
- Windows 10 32/64-bit

More information

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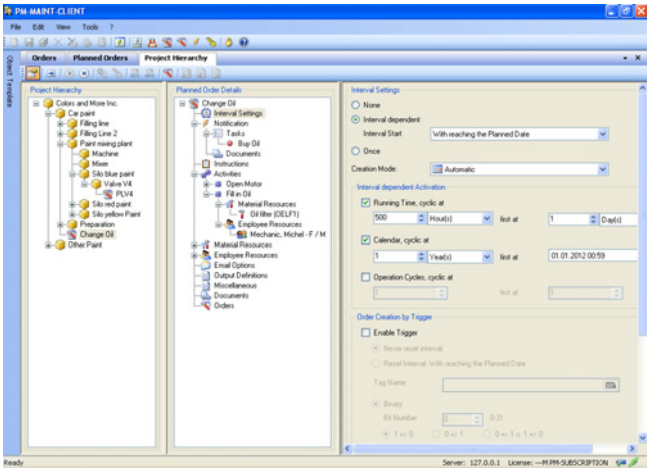
You can find more information on the Internet at:
www.iba-ag.com

Overview



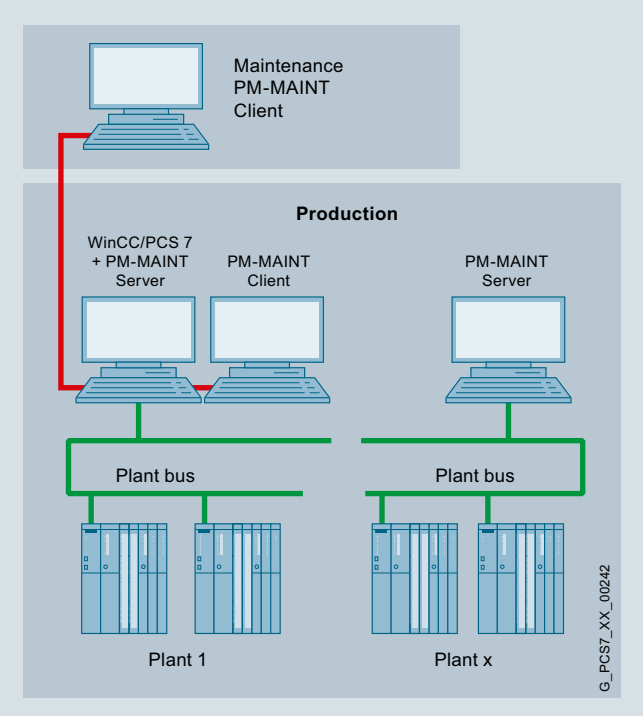
PM-MAINT is a sector/technology-independent maintenance management system for inspection, servicing and maintenance of production plants, and is primarily designed for preventive, performance-dependent maintenance. With the objective of maximizing plant availability, PM-MAINT uses the performance data or calendar intervals to generate predictive planning of maintenance measures. PM-MAINT determines the optimum time with regard to production and maintenance. Whereas prematurely conducted inspections and servicing shorten the intervals and thus increase the maintenance costs, and delayed implementation can result in production losses with high repair and downtime costs.

PM-MAINT is linked to the automation level of the process control system via the SIMATIC PCS 7 operator system or per OPC. With its numerous import and export options, it is an ideal supplement for the SIMATIC PCS 7 Maintenance Station.

Note:

The maintenance management system, PM-MAINT, can be use in plants in combination with SIMATIC PCS 7 V8.x and V9.0.

Design



Example configuration of PM-MAINT in a client/server architecture

PM-MAINT is scalable, and grows with your requirements. It can be used as a local single-user system or also as a distributed multi-user system in a client/server architecture. PM-MAINT can be installed in addition to the SIMATIC PCS 7 OS software on an operator station of version Single Station, Server, or Client.

The PM-MAINT system software is structured as follows:

- Type S for Single Station (single-user system) or Server (multi-user system)
- Type C for Client (multi-user system)

PM-MAINT supports the operating systems Windows 7, Windows 8.1, Windows 10, Windows Server 2008 R2 and Windows Server 2012 R2.

Function

PM-MAINT permits mapping of the hierarchical plant structure of the company down to the level of the smallest units for maintenance. Maintenance jobs can be created for each maintenance object.

Maintenance planning and activation

In the case of performance-dependent maintenance, PM-MAINT utilizes operating hours and switching cycles from the current process data to calculate the recommended maintenance dates. When these dates are reached, PM-MAINT automatically creates the maintenance job. Additional options for creating maintenance jobs are process events or calendar intervals (days, weeks, months, quarters, years).

Assignment of documents

Any documents can be added as supplementary information to each maintenance object or job in the object tree, e.g.

- Dimension drawings
- Technical specifications
- Maintenance information

Job recording/checklists

Maintenance jobs can be recorded manually or automatically. These reports are then used by the maintenance personnel as a checklist. Lists with ordering data for material requirements planning are additionally available for printing depending on the job. Processing of measures can also be documented in a report.

Material and personnel assignment

The required material and personnel resources can be assigned to the maintenance jobs. The materials and working hours actually required can then be entered in the feedback relating to maintenance activities.

Archiving and analysis

All maintenance activities are saved in an archive which is permanently evaluated to achieve a continuous improvement in maintenance procedures. Unexpected maintenance jobs can be recorded manually or by means of the SIMATIC PCS 7 Maintenance Station, and integrated into the long-term archiving.

Ordering data

Ordering data	Article No.
PM-MAINT system software for SIMATIC PCS 7 V8 and V9	
PM-MAINT system software Type S For a single station (single-user system) or a server (multi-user system) Engineering and runtime software, software class A, 2 languages (German, English), single license for 1 installation Delivery package: Software and electronic documentation on DVD, dongle (hard lock), and Certificate of License	**9AE7104-2SS30-1AA0**
PM-MAINT system software Type C For a client (multi-user system) Engineering and runtime software, software class A, 2 languages (German, English), single license for 1 installation Delivery package: Software and electronic documentation on DVD, dongle (hard lock), and Certificate of License	**9AE7104-4SC00-1AA0**

More information

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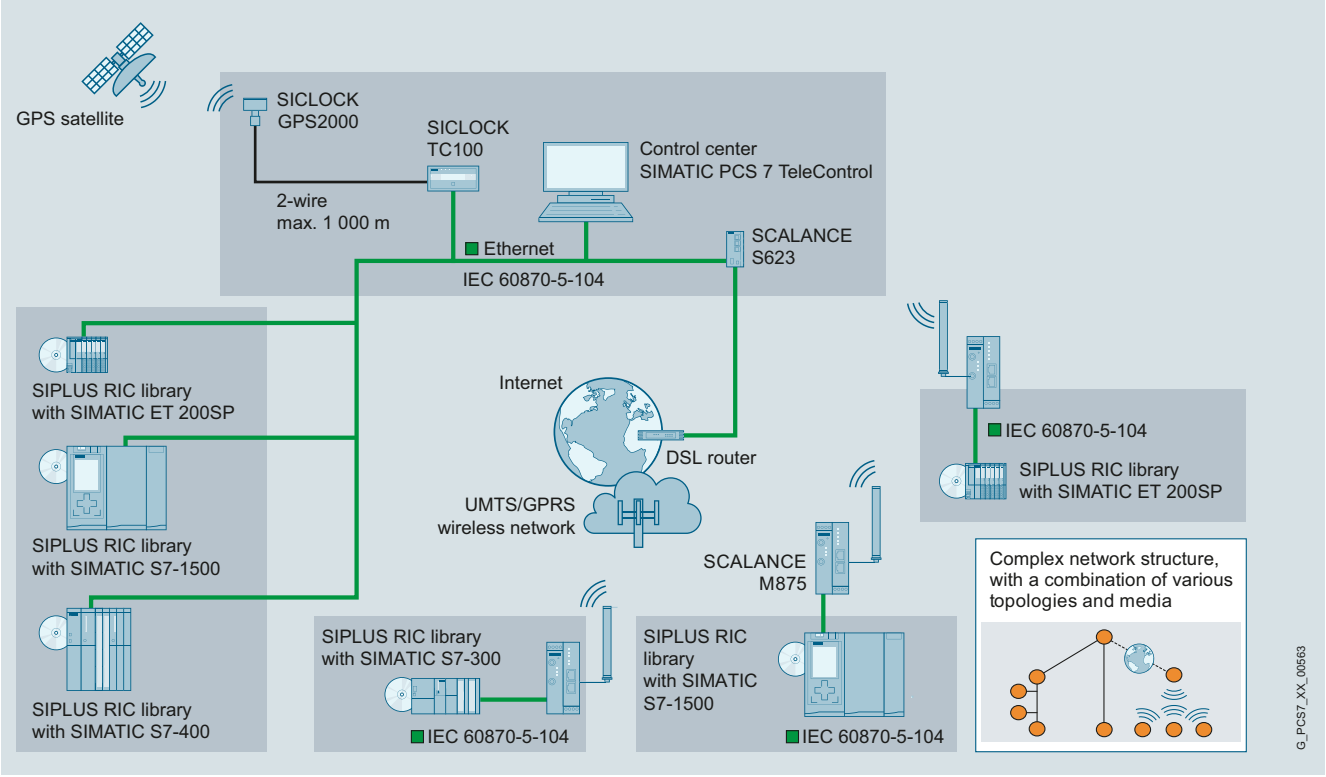
You can find additional information on the Internet at:
www.siemens.com/process-management

Notes

Telecontrol

Telecontrol connection to control center in SIMATIC PCS 7

Overview



Example of complex TCP/IP-based WAN with cable and wireless networks

The telecontrol communication between a telecontrol center integrated in SIMATIC PCS 7 and its outstations (Remote Terminal Units) is based on SIPLUS RIC libraries and is possible via serial communication links as well as via Ethernet TCP/IP communication links – with telecontrol protocol option

- IEC 60870-5-104 (Ethernet TCP/IP)
- IEC 60870-5-101 (serial)

Advantages of the TCP/IP-based connection through IEC 60870-5-104 are simultaneous data transfer to multiple devices and diagnostics using SIMATIC Manager.

Security mechanisms are not defined in the application area of IEC 60870-5-104. Therefore, encryption of the user data (data integrity) and authentication of the communication partners must be implemented separately (Industrial Security).

The telecontrol center integrated with SIMATIC PCS 7 TeleControl into the operator system of the process control system is the master during telecontrol communication. The Remote Terminal Units (RTUs) are slaves of the control center on the one hand, but can additionally function as masters for subordinate outstations with the following protocols:

- IEC 60870-5-104 (Ethernet TCP/IP)
- IEC 60870-5-101 (serial)
- IEC 60870-5-103 (serial)

Note:

Telecontrol integration into the SIMATIC PCS 7 process control system using SIPLUS RIC libraries with IEC 60870-5-104 or IEC 60870-5-101 protocols requires one of the following software combinations:

- SIMATIC PCS 7 V9.0 and SIMATIC PCS 7 TeleControl V9.0
- SIMATIC PCS 7 V8.2 and SIMATIC PCS 7 TeleControl V8.2
- SIMATIC PCS 7 V8.1 and SIMATIC PCS 7 TeleControl V8.1
- SIMATIC PCS 7 V8.0+SP1 and SIMATIC PCS 7 TeleControl V8.0+SP1/SP2
- SIMATIC PCS 7 V8.0 incl. Update 1 and SIMATIC PCS 7 TeleControl V8.0

Design

Remote terminal units (RTUs)

RTUs with hardware controller

In combination with a type-specific SIPLUS RIC library, hardware controllers from the following product series can be used as remote stations in telecontrol applications with IEC 60870-5-101 (serial) or IEC 60870-5-104 (Ethernet TCP/IP) telecontrol protocols:

Controller	Number of I/Os (dependent on CPU size, protocol type, and application)	Number of information or data points
Integrated in SIMATIC ET 200S	30 … 200 I/Os	Approx. 200
Integrated in SIMATIC ET 200SP	30 ... 500 I/Os	Approx. 500
SIMATIC S7-300/S7-300F	100 … 2 000 I/Os	Approx. 2 000
SIMATIC S7-400/S7-400F	500 … 5 000 I/Os	Approx. 5 000
SIMATIC S7-400H/S7-400FH	500 … 5 000 I/Os	Approx. 5 000
SIMATIC S7-1500	200 ... 5 000 I/Os	Approx. 5 000

Comparable controllers from the SIPLUS extreme product spectrum can be used for especially demanding environmental conditions. Information about the controllers from the SIPLUS extreme product spectrum can be found in the ST 70 catalog and on the Internet at: www.siemens.de/siplus

Controller for use as a RTU – parameters and scaling

RTU type	ET 200S		S7-300				S7-400			
CPU	IM 151-7 IM 151-7F	IM 151-8 IM 151-8F	CPU 314C-2 PN/DP	CPU 315-2 PN/DP CPU 315F-2 PN/DP	CPU 317-2 PN/DP CPU 317F-2 PN/DP	CPU 319-3 PN/DP CPU 319F-3 PN/DP	CPU 412-2 PN CPU 412-5H PN/DP	CPU 414-3 PN/DP CPU 414-5H PN/DP	CPU 416-3 PN/DP CPU 416-5H PN/DP	CPU 417-5H PN/DP CPU 410-5H Process Automation
Work memory	128/192 KB	192/256 KB	192 KB	384/512 KB	1024/1536 KB	2048/2560 KB	1 MB	4 MB	16 MB	32 MB
Data memory, non-volatile	64 KB	64 KB	64 KB	128 KB	256 KB	700 KB	–	–	–	–
Data memory, volatile	64/128 KB	128/192 KB	128 KB	256/384 KB	768/1280 KB	1348/1860 KB	–	–	–	–
Code	–	–	–	–	–	–	512 KB	2 MB	8/6 MB	16 MB
Data	–	–	–	–	–	–	512 KB	2 MB	8/10 MB	16 MB
SIPLUS RIC program	64 KB	64 KB	64 KB	64 KB	64 KB	64 KB	64 KB	64 KB	64 KB	64 KB
Buffer (volatile)	64 KB	64 KB	64 KB	192 KB	704 KB	1024 KB	–	–	–	–
Buffer (message frames)	Approx. 1 500	Approx. 1 500	Approx. 1 500	Approx. 4 500	Approx. 16 000	Approx. 24 000	Approx. 4 500	Approx. 12 000	Approx. 24 000	Approx. 24 000
Recommended memory card	512 KB	512 KB	512 KB	512 KB	2 MB	2 MB	–	–	–	–
Number of Ethernet interfaces on CPU	0	1	1	1	1	1	1	1	1	1/2
Number of TCP/IP connections	–	8	8	8	16	32	46	62	94	118
Recommended number of information or data points	200	200	200	1 000	2 000	5 000	1 000	2 000	5 000	5 000

Design (continued)

RTU type	ET 200SP		S7-1500					
CPU	CPU 1510-1 PN CPU 1510F-1 PN	CPU 1512-1 PN CPU 1512F-1 PN	CPU 1511-1 PN CPU 1511F-1 PN	CPU 1513-1 PN CPU 1513F-1 PN	CPU 1515-2 PN CPU 1515F-2 PN	CPU 1516-3 PN/DP CPU 1516F-3 PN/DP	CPU 1517-3 PN/DP CPU 1517F-3 PN/DP	CPU 1518-4 PN/DP CPU 1518F-4 PN/DP
Work memory	0.85/0.9 MB	1.3 MB	1.15/1.225 MB	1.8/1.95 MB	3.5/3.75 MB	6/6.5 MB	10/11 MB	24/26 MB
Data memory, non-volatile	–	–	–	–	–	–	–	–
Data memory, volatile	–	–	–	–	–	–	–	–
Code	0.1/0.15 MB	0.2/0.3 MB	0.15/0.225 MB	0.3/0.45 MB	0.5/0.75 MB	1/1.5 MB	2/3 MB	4/6 MB
Data	0.75 MB	1 MB	1 MB	1.5 MB	3 MB	5 MB	8 MB	20 MB
SIPLUS RIC program	0.096 MB	0.096 MB	0.096 MB	0.096 MB	0.096 MB	0.096 MB	0.096 MB	0.096 MB
Buffer (volatile)	–	–	–	–	–	–	–	–
Buffer (message frames)	Approx. 3 000	Approx. 6 000	Approx. 6 000	Approx. 12 000	Approx. 24 000	Approx. 24 000	Approx. 24 000	Approx. 24 000
Recommended memory card	12 MB	12 MB	12 MB	12 MB	24 MB	24 MB	256 MB	256 MB/ 2 GB
Number of Ethernet interfaces on CPU	1	1	1	1	2	2	2	3
Number of TCP/IP connections without/with CPs	54	78	54/86	78/118	108/192	118/246	150/310	182/374
Recommended number of information or data points	200	800	200	1 000	1 000	2 000	5 000	5 000

For detailed technical information and ordering data for the RTU types listed in the table, refer to the ST 70 and ST PCS 7 catalogs.

RTUs with software controller

In combination with a SIPLUS RIC library, SIMATIC PC-based systems with a software controller (SIMATIC WinAC RTX, SIMATIC S7-1500 Software Controller or SIMATIC ET 200SP Open Controller) are also suitable as remote stations in telecontrol applications with remote control protocol IEC 60870-5-101 (serial) or IEC-60870-5-104 (Ethernet TCP/IP).

SIPLUS RIC Libraries

The SIPLUS RIC libraries for IEC 60870-5-101 and -104 protocols are delivered as master and slave. The library for the IEC 60870-5-103 protocol is only available as a master.

The product package for all SIPLUS RIC libraries include a CD with software and documentation and a certificate of license for all protocols and interfaces. With SIPLUS RIC libraries for SIMATIC ET 200S, SIMATIC ET 200SP, SIMATIC S7-300 and SIMATIC S7-1500 RTU types, a memory card (MMC/SMC) is also included. The product variations offered for a hardware controller type are distinguished by the storage capacity of the memory card.

A license is required for each of the two CPUs when redundant SIMATIC S7-400 systems are used.

Depending on the RTU type, activation can be performed using either the supplied memory card (ET 200S, ET 200SP, S7-300, S7-1500) or via the e-mail address siplus-ric.automation@siemens.com (S7-400). All libraries of the respective series are activated.

Design (continued)

Communication and network components

Communication and network components from the IK PI Catalog supplement the product range for configuration of IEC 60870-5-101/104 telecontrol applications using SIPLUS RIC libraries such as:

- TCP/IP converter and serial modem module
- Mobile radio components
- Industrial Ethernet switches, TCP/IP routers, and media converters
- SCALANCE W industrial wireless LAN components
- SCALANCE S industrial security modules, e.g. S612
- Dedicated line accessories
- Connecting cables

Network topologies

For the configuration of complete, hierarchical telecontrol networks, it is possible to implement basic topology types such as point-to-point, multipoint, star and ring in various media forms and to combine them as required depending on the infrastructure requirements.

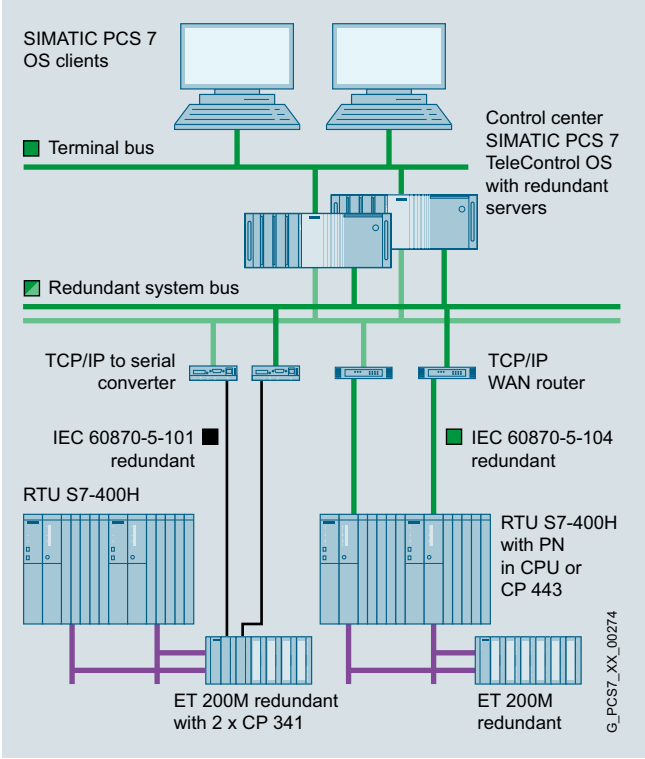
Examples of media forms

- Private networks
  - Radio
  - Dedicated line via fiber-optic cable or via modem
  - Ethernet network, e.g. with SCALANCE X and fiber-optic cables
  - WLAN, e.g. with SCALANCE W
- Public networks
  - GPRS
  - EGPRS
  - UMTS
  - LTE
  - DSL
  - Satellite communication, e.g. Inmarsat

Redundancy

Telecontrol communication availability can be improved by connecting the RTU to the control center in the process control system via two transmission paths. The two redundant transmission paths can be based on the same or different telecontrol protocols.

The use of redundant RTUs of type S7-400H (high availability) or S7-400FH (safety-related and high availability) results in further options for increasing the availability, e.g. redundant design of telecontrol communication, fieldbus and process I/O. As a result of the seamless integration of the telecontrol system in the SIMATIC PCS 7 process control system, its implementation depends on the redundancy concept of the complete system (see example of redundant telecontrol configuration with the IEC 60870-5-101/104 telecontrol protocols).



Example of redundant telecontrol configuration with the IEC 60870-5-101/-104 telecontrol protocols

Connection of SIPROTEC protection devices

SIPLUS RIC IEC 60870-5-103 Master can also be used to connect protection devices such as SIPROTEC via SIMATIC PCS 7 TeleControl. The RTU then serves as a converter between the IEC 60870-5-103 protection data protocol and the IEC 60870-5-101 or IEC 60870-5-104 protocol.

Compared to PROFIBUS DP interfacing of the protective equipment, this configuration provides the following advantages:

- Longer distances achievable
- High precision time stamps are transferred from the protective equipment to the control system

Telecontrol connection to control center in SIMATIC PCS 7

Function

Telecontrol communication with SIPLUS RIC is characterized by the following features:

- Uniform configuration using the SIMATIC Manager (except for the controller SIMATIC S7-1500 and ET 200SP and SIMATIC S7-1500 Software Controller and SIMATIC ET 200SP Open Controller)
- Event-driven data transfer
- Monitored output of commands for reliable detection of malfunctions
- Diagnostics functions for rapid tracing and elimination of faults
- High availability thanks to redundant data communication

Additional special features of the IEC 60870-5-101 and IEC 60870-5-104 telecontrol protocols include:

- Time stamping for data acquisition in the outstation
- Data buffering for bridging communication interruptions (for RTU-specific information on buffering, see tables in the "Remote Terminal Units" section)
- Time synchronization via the control center

Ordering data

SIPLUS RIC libraries for the telecontrol connection to a control center in SIMATIC PCS 7

	Article No.
SIPLUS RIC libraries for RTU type SIMATIC ET 200S (CPU integrated)	
Note: Activation with memory card included in the product package	
SIPLUS RIC library for SIMATIC ET 200S Consisting of CD (software and documentation), certificate of license and Micro Memory Card (can be used for all supported SIMATIC ET 200S CPUs):	
• 512 KB Micro Memory Card (MMC)	**6AG6003-5CF00-0CA0**
• 2 MB Micro Memory Card (MMC)	**6AG6003-5CF00-0DA0**
SIPLUS RIC libraries for RTU type SIMATIC ET 200SP (CPU integrated)	
Note: Activation with memory card included in the product package	
SIPLUS RIC library for SIMATIC S7-1500 For SIMATIC S7-1500 CPUs and SIMATIC ET 200SP CPUs, consisting of CD (software and documentation), certificate of license and SIMATIC Memory Card	
• 12 MB SIMATIC memory card (SMC)	**6AG6003-8CF00-0LE0**
SIPLUS RIC libraries for RTU type SIMATIC S7-300	
Note: Activation with memory card included in the product package	
SIPLUS RIC library for SIMATIC S7-300 Consisting of CD (software and documentation), certificate of license and Micro Memory Card (can be used for all supported SIMATIC S7-300 CPUs as of firmware V2.6):	
• 512 KB Micro Memory Card (MMC)	**6AG6003-1CF00-0CA0**
• 2 MB Micro Memory Card (MMC)	**6AG6003-1CF00-0DA0**

	Article No.
SIPLUS RIC libraries for RTU type SIMATIC S7-400	
Note: Activation via e-mail address siplus-ric.automation@siemens.com	
SIPLUS RIC library for SIMATIC S7-400 Consisting of CD (software and documentation) and certificate of license	**6AG6003-3CF00-0AA0**
Note: A memory card, a CPU (CPU 41x as of firmware V4.x) or a system expansion card of the CPU 410-5H Process Automation (as of SIPLUS RIC V1.6 UPD3) are licensed; 2 licenses are required for redundant systems.	
SIPLUS RIC libraries for RTU type SIMATIC S7-1500	
Note: Activation with memory card included in the product package	
SIPLUS RIC library for SIMATIC S7-1500 Consisting of CD (software and documentation), certificate of license and SIMATIC memory card (can be used for all supported SIMATIC S7-1500 CPUs):	
• 12 MB SIMATIC memory card (SMC)	**6AG6003-8CF00-0LE0**
• 24 MB SIMATIC memory card (SMC)	**6AG6003-7CF00-0LF0**
• 256 MB SIMATIC memory card (SMC)	**6AG6003-7CF00-0LL0**
• 2 GB SIMATIC memory card (SMC)	**6AG6003-7CF00-0LP0**
SIPLUS RIC library for SIMATIC PC-based automation Software for SIMATIC WinAC RTX, SIMATIC S7-1500 Software Controller and ET 200SP Open Controller, consisting of CD (software and documentation) and certificate of license	**6AG6003-0CF00-0AA0**
Note: Activation via e-mail address siplus-ric.automation@siemens.com	

Overview

SIMATIC PCS 7 automation systems can also communicate with a remote third-party control center by means of the telecontrol protocol IEC 60870-5-101 (serial) or IEC 60870-5-104 (TCP/IP).

The IEC 60870-5-101 protocol permits use of classic WAN connections over modems and dedicated lines.
The IEC 60870-5-104 protocol supports TCP/IP-based WAN-connections like Internet/DSL, GPRS or LTE.

Application

Possible fields of application include:

- Interfacing of power plant automation based on SIMATIC PCS 7 to network control centers for power distribution
- Interfacing of pumping and compressor stations automated using SIMATIC PCS 7 to higher-level control centers for gas, oil or water pipelines

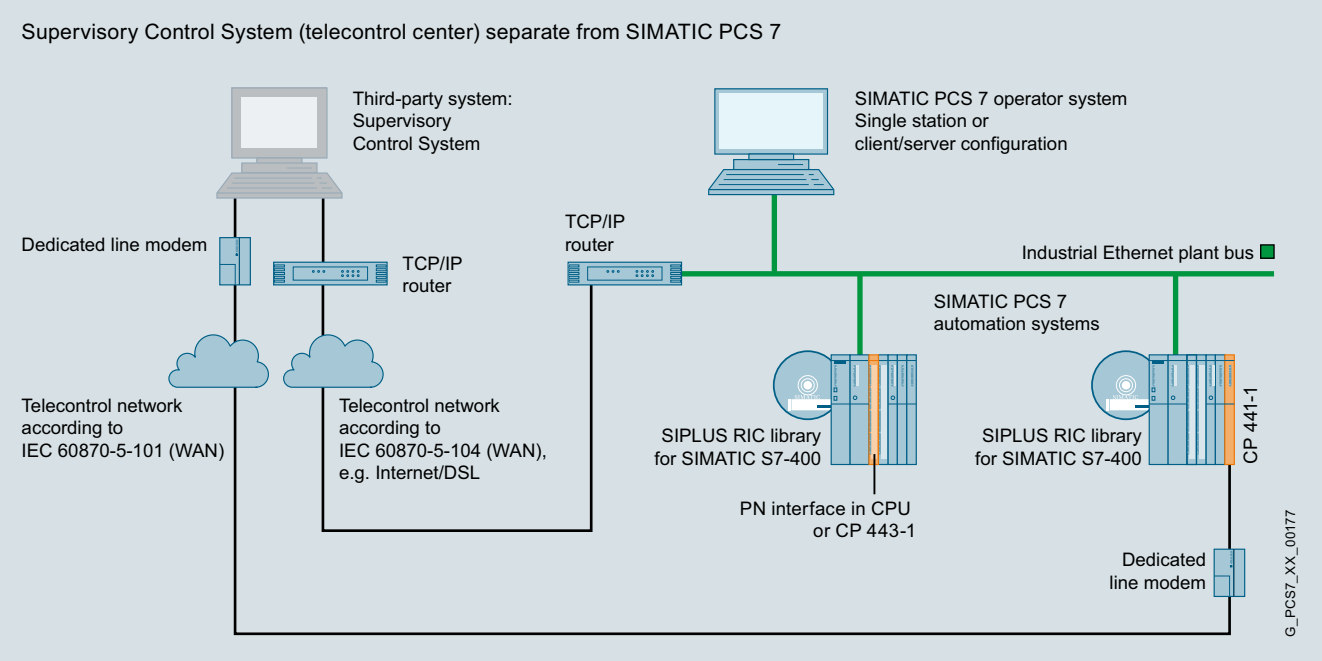
Design

Notes:

With the telecontrol configurations described below for connection of SIMATIC PCS 7 automation systems to a third-party control center, use of the SIPLUS RIC for SIMATIC S7-400 library is independent of SIMATIC PCS 7 TeleControl.

The materials required to design a telecontrol link, e.g. TCP/IP router, CP 443-1, CP 441-1, CP 341, dedicated line modem, cables etc. are accessories which are not included in this catalog. For additional information and ordering data, see IK PI and ST 70 catalogs

Telecontrol connection for single SIMATIC PCS 7 automation systems (single station)



Configuration examples of the telecontrol connection of SIMATIC PCS 7 automation systems of single station design with the IEC 60870-5-101 and IEC 60870-5-104 telecontrol protocols

Depending on the protocol, the following automation system connection options can be used for communication:

- CP 441 (IEC 60870-5-101)
- PN interface in CPU/CP 443-1 (IEC 60870-5-104)

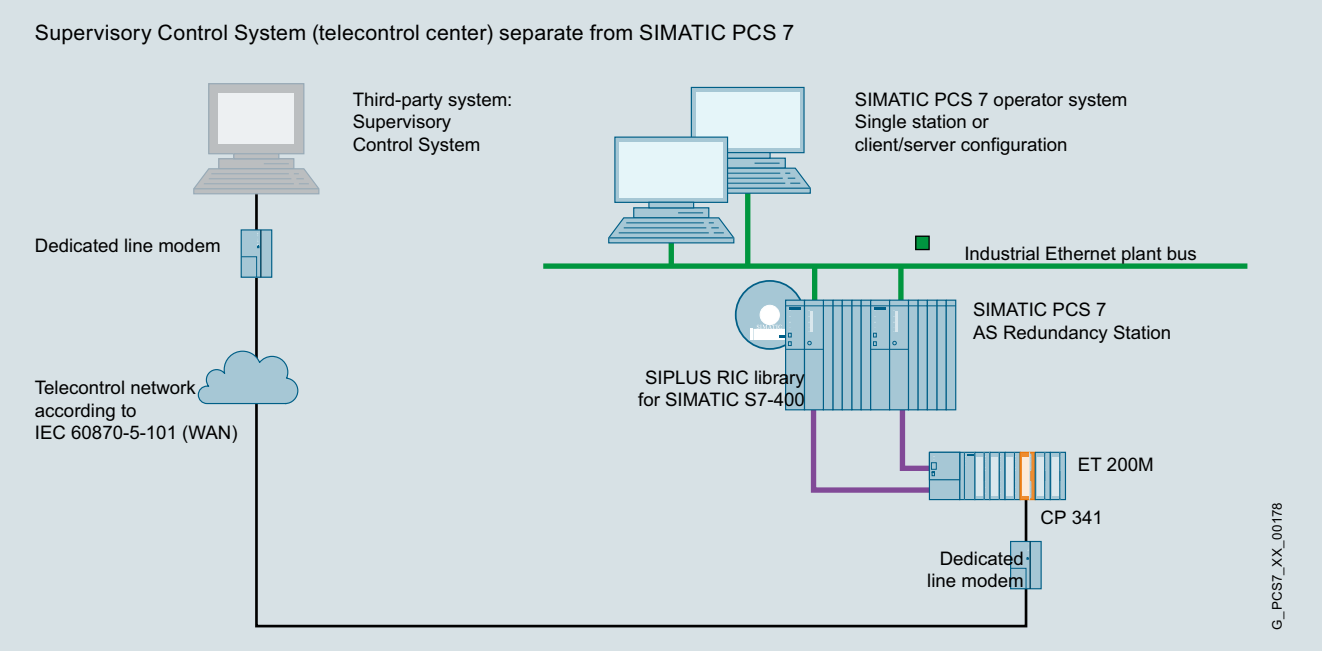
In the SIMATIC PCS 7 automation system, additive driver blocks from the SIPLUS RIC library for SIMATIC S7-400 adapt the interface for communication using the IEC 60870-5-101 or IEC 60870-5-104 standardized protocols. Configuration is performed using the SIMATIC Manager as usual for SIMATIC PCS 7. This equally applies to automation systems designed as single station or redundant station.

Telecontrol connection to third-party control center

Design (continued)

Telecontrol connection for redundant SIMATIC PCS 7 automation systems (redundant station)

Redundant configuration with IEC 60870-5-101 telecontrol protocol (serial)



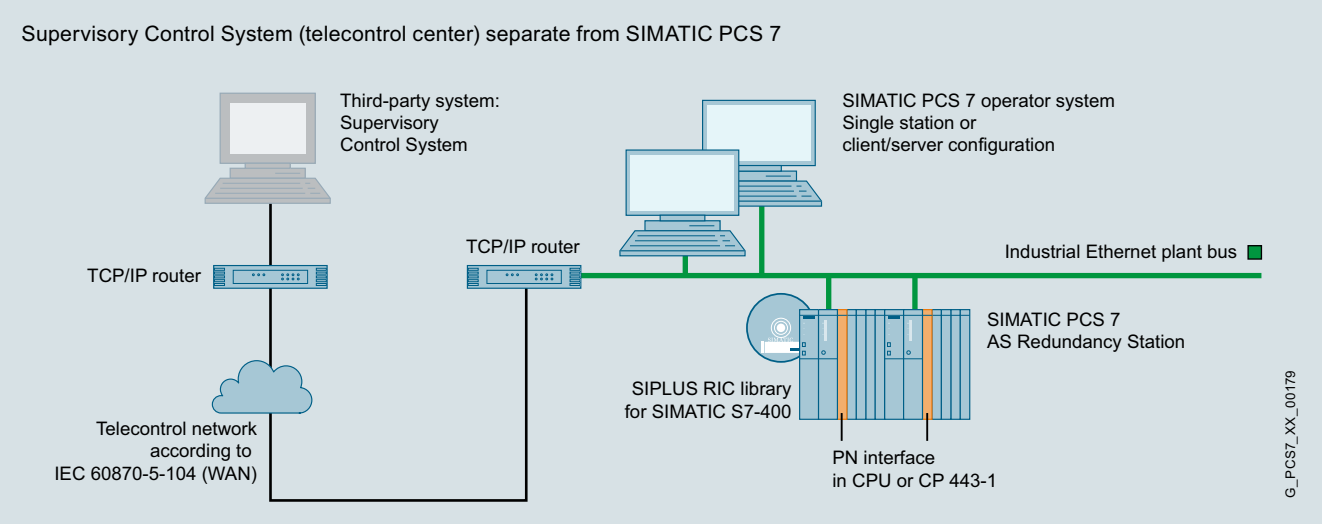
Configuration example of the telecontrol connection of redundant SIMATIC PCS 7 AS with the IEC 60870-5-101 telecontrol protocol

- The control center is linked via a serial telecontrol connection with IEC 60870-5-101 protocol to a CP 340 or CP 341 in an ET 200M station of the SIMATIC PCS 7 system.
- If the master system fails, the standby system of the redundant automation system takes over data exchange with the control center bumpless via the CP 341 in the ET 200M station.
- Failure of the master system can be signaled to the control center.

7

Design (continued)

Redundant configuration with IEC 60870-5-104 telecontrol protocol (TCP/IP)



Configuration example of the telecontrol connection of redundant SIMATIC PCS 7 AS with the IEC 60870-5-104 telecontrol protocol

- The control center is linked via a TCP/IP-based WAN to the SIMATIC PCS 7 system bus.
- The control center establishes a TCP/IP connection to an AS subsystem with each of the two communication interfaces via which the redundant automation system is integrated into the system bus.
- The control center starts the IEC 60870-5-104 telecontrol protocol via the TCP/IP connection to the master system and monitors the TCP/IP connection to the standby system using test frames.
- If the master system fails, the control center signals the associated connection as being faulty, and starts the IEC 60870-5-104 telecontrol protocol via the TCP/IP connection to the standby system. It then attempts to reestablish the faulty connection.

Ordering data

	Article No.
SIPLUS RIC libraries for RTU type SIMATIC S7-400 Note: Activation via e-mail address siplus-ric.automation@siemens.com	
SIPLUS RIC library for SIMATIC S7-400 Consisting of CD (software and documentation) and certificate of license Note: A memory card, a CPU (CPU 41x as of firmware V4.x) or a system expansion card of the CPU 410-5H Process Automation (as of SIPLUS RIC V1.6 UPD3) are licensed; 2 licenses are required for redundant systems.	**6AG6003-3CF00-0AA0**

More information

As a specialist for complete solutions in the product and system business, we would be pleased to advise you concerning generation of an individual configuration and the selection of accessories. If required, we can also supply preconfigured bundles or turnkey outstations installed in wall enclosures, cabinets or containers. Contact address for quotation and consulting:

Siemens AG
Breslauer Str. 5
90766 Fürth
Germany

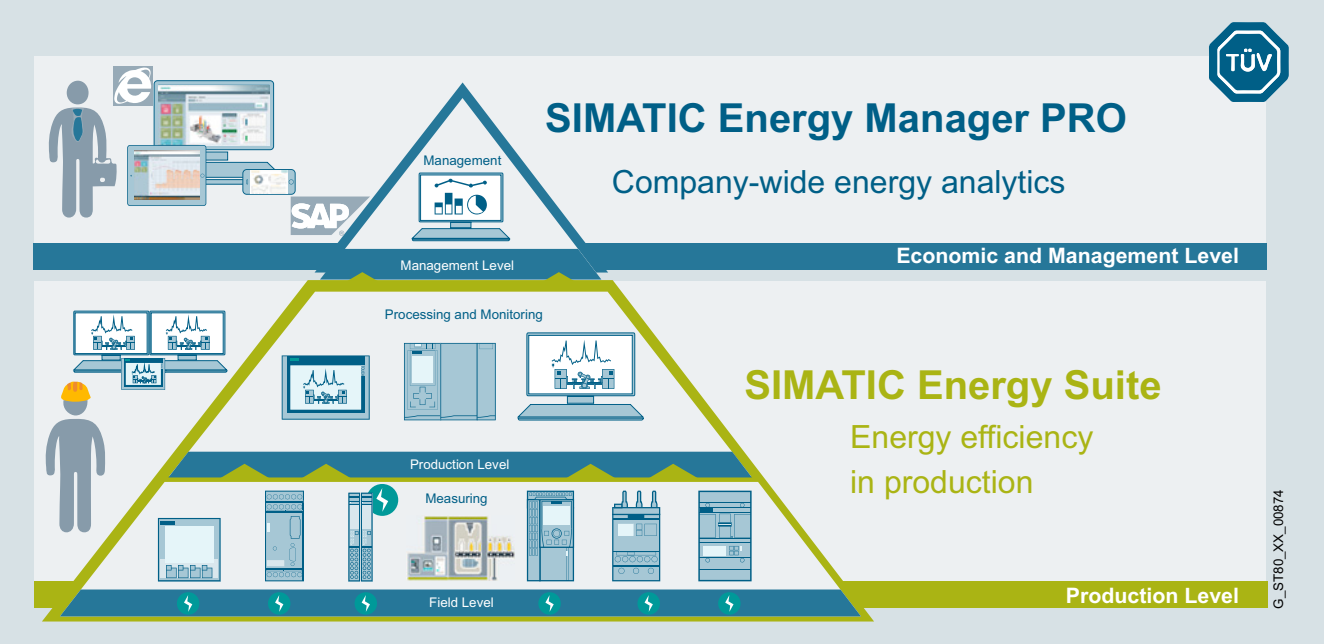
Tel.: +49 911 750 - 4790
Fax: +49 911 750 - 9917

E-mail: siplus-ric.automation@siemens.com

You can find additional information on the Internet at:
www.siemens.com/siplus-ric

Notes

Overview



SIMATIC Energy Manager PRO energy management system

The SIMATIC Energy Manager PRO provides users with a modular, non-sector-specific energy management system for industrial operations.

SIMATIC Energy Manager PRO forms the basis for cost-effective energy management to reduce energy costs and increase energy efficiency.

Released SIMATIC software:

- SIMATIC WinCC V7.3 SE, SIMATIC WinCC V7.4
- SIMATIC WinCC V7.2
- SIMATIC WinCC RT Professional V13, SIMATIC WinCC RT Professional V14
- SIMATIC PCS7 V8.1, SIMATIC PCS7 V8.2
- SIMATIC NET V12 SP2

Note:

Among other things, SIMATIC Energy Manager PRO V7.0, a dynamic, widget-based web dashboard, offers dynamic web visualization and seamless interfacing to the SIMATIC Energy Suite.

Upgrading from SIMATIC B.Data 6.0 to SIMATIC Energy Manager PRO 7.0 is possible at any time and is included in the SIMATIC B.Data SUS.

Benefits

Advantages:

- Company-wide transparency thanks to consistent energy and material balancing of power generation and consumption plants
- Energy costs allocated according to the costs-by-cause principle and transfer to the billing system (e.g. SAP R/3 CO)
- Characteristic values for substantiated statements on increasing the efficiency of power generation systems and consumers
- Planning reliability thanks to production-related load and demand forecasts
- Support of purchasing with cost-optimized energy procurement
- Fulfilment of legal obligations for monitoring and reporting on greenhouse gas emissions (CO2 emissions)
- Reduction of workload by automatically generating internal and external energy reports
- Support of customers in the continuous improvement of energy efficiency (e.g. ISO 50001) by integrated project management for energy efficiency measures

Design

SIMATIC Energy Manager PRO V7.0

SIMATIC Energy Manager PRO is delivered as a basic package which can be flexibly expanded by tag packages.

- The **basic package** already contains:
  - 50 tags
  - 1 Energy Manager PRO Acquisition component
  - 1 Energy Manager PRO Client
  - 1 Energy Manager PRO Web Client
- Available **tag packages**:
  - 50 tags
  - 100 tags
  - 250 tags
  - 500 tags
  - 1 000 tags
  - 5 000 tags
  - 30 000 tags

SIMATIC Energy Manager PRO Software Update Service (SUS)

For each Energy Manager PRO system there is a corresponding SUS (Software Update Service) which is dependent on the number of tags.

The SUS is valid for 1 year. The contract is automatically extended by 1 more year unless canceled 3 months prior to expiration.

SIMATIC Energy Manager PRO expansions

The scope of Energy Manager PRO can be extended with add-on packages:

- Energy Manager PRO Web Clients (3, 20 or 60)
- Energy Manager PRO Client
- Energy Manager PRO Acquisition component
- Energy Manager PRO Planning and Forecast

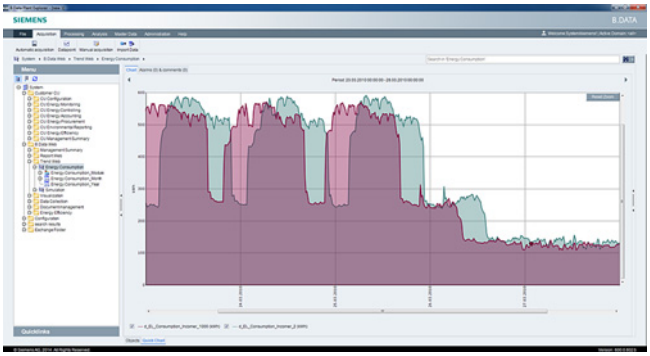
The number of clients and web clients indicates the number of times simultaneous access is possible.

Function

Acquisition and pre-processing of energy and operating data

- In addition to an interface to the SIMATIC Energy Suite, SIMATIC Energy Manager PRO also offers the latest interface standards such as WinCC, OPC UA, OPC DA, OPC HDA, MODBUS TCP, ODBC, ASCII and XML
- Preprocessing of energy data in a real-time calculation core that can be freely modeled including a formula editor for defining and configuring new calculation functions (heat calculations for boilers, quality for cogeneration plants, etc.)
- Energy Manager PRO Mobile for mobile recording of energy data including route planning for meter reading operations
- Management and analysis of energy data
- Automatic plausibility check and generation of simulated values
- Long-term archive with versioning, compression and consolidation functions
- Measured value editor for entering and processing energy and operating values
- Trender for presenting up-to-date (online) and historical load curves (trends), also for setpoint/actual value analyses
- Energy management dashboards for creating cross-company transparency through visualization of performance indicators and display of Sankey diagrams.

SIMATIC Energy Manager PRO

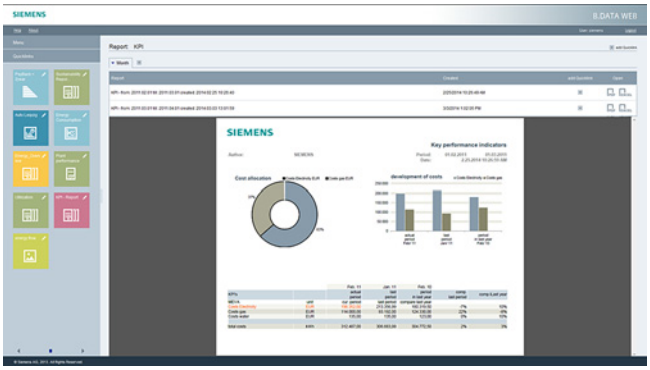


Function (continued)

Energy and material balance

Freely parameterizable balancing of the energy flows of various media such as electricity, heat, gas, steam, and emissions (CO2) in the Energy Manager PRO Plant Explorer

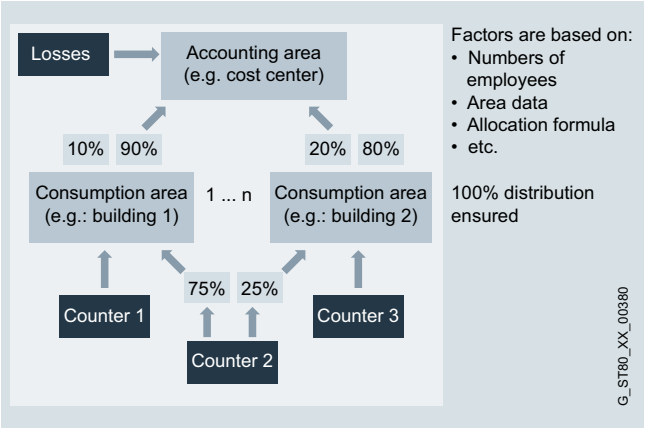
- Calculation of characteristic values (KPIs, efficiency coefficients, etc.) with direct reference to production (batches, quantities, etc.).



Energy accounting (costs and revenue accounting)

Calculation and allocation/assignment of energy costs to plants and/or customers/cost units in accordance with the costs-by-cause principle. The bottom up (measurement) and top down (allocation) procedures are supported here

- Flexible modeling of the hierarchic accounting structures in the Plant Explorer
- Tariff allocation of quantities, flexible price assessment with tariff and price time series
- Transfer of costs/revenues to the ERP system (e.g. SAP R/3 CO)



Energy planning

- Generation of requirement forecasts based on production-dependent factors (production planning) and basic load profiles (typical days)
- With multi-variable regression analysis, it is simple to evaluate and model influencing factors.
  This model can be used to calculate the future energy demand
- Generation of energy schedules for registering with the energy suppliers.

Energy reporting

- Freely parameterizable report generator for creating balances, protocols, shift logs, bills
- Fully automated reporting with task management, email dispatch and document management
- Energy Manager PRO (web client) for company-wide viewing of dashboards, reports and results
- Information about discrepancies from specified parameters through KPI warning system

Technical specifications

	SIMATIC Energy Manager PRO V7.0
Operating system	• Windows Server 2008 R2 (English/German) • Windows Server 2012 R2 (English/German) • Windows Server 2016 (English/German) • Windows 7 Professional/Ultimate SP1 (English/German) • Windows 8.1 Pro/Enterprise 64-bit (English/German) • Windows 10 Pro/Enterprise 64-bit (English/German) • Minimum of 4 GB RAM
Interface	In addition to an interface to WinCC and S7 controllers, Energy Manager PRO also offers the latest interface standards such as OPC DA, OPC HDA, OPC UA, MODBUS TCP, ODBC, ASCII and XML.
WinCC versions [1]	• SIMATIC WinCC V7.2, V7.3 SE, V7.4 • SIMATIC WinCC RT Professional V13, V14
PCS 7 versions [2]	• SIMATIC PCS 7 V8.1 • SIMATIC PCS 7 V8.2

1) If an acquisition computer is installed on a WinCC system, these requirements must also be complied with.

2) The SIMATIC Energy Manager PRO system for connection to the PCS 7 must always be installed on a separate PC.

Ordering data

	Article No.
SIMATIC Energy Manager PRO V7.0	
Standard scope of delivery	
• SIMATIC Energy Manager PRO incl. 50 tags [1]	**6AV6372-2DF07-0AX0**
• Tag Package 50 [1]	**6AV6372-2DF07-0CX0**
• Tag Package 100 [1]	**6AV6372-2DF07-0DX0**
• Tag Package 250 [1]	**6AV6372-2DF07-0EX0**
• Tag Package 500 [1]	**6AV6372-2DF07-0FX0**
• Tag Package 1 000 [1]	**6AV6372-2DF07-0GX0**
• Tag Package 5 000 [1]	**6AV6372-2DF07-0HX0**
• Tag Package 30 000 [1]	**6AV6372-2DF07-0JX0**
Download	
• SIMATIC Energy Manager PRO incl. 50 tags [1]	**6AV6372-2DF07-0AH0**
• Tag Package 50 [1]	**6AV6372-2DF07-0CH0**
• Tag Package 100 [1]	**6AV6372-2DF07-0DH0**
• Tag Package 250 [1]	**6AV6372-2DF07-0EH0**
• Tag Package 500 [1]	**6AV6372-2DF07-0FH0**
• Tag Package 1 000 [1]	**6AV6372-2DF07-0GH0**
• Tag Package 5 000 [1]	**6AV6372-2DF07-0HH0**
• Tag Package 30 000 [1]	**6AV6372-2DF07-0JH0**
SIMATIC Energy Manager PRO V7.0 expansions	
Standard scope of delivery	
• 3 Web Clients	**6AV6372-2DF27-0AX0**
• 20 Web Clients	**6AV6372-2DF27-0BX0**
• 60 Web Clients	**6AV6372-2DF27-0CX0**
• Client	**6AV6372-2DF37-0AX0**
• Planning & Forecast	**6AV6372-2DF47-0AX0**
• Acquisition component	**6AV6372-2DF57-0AX0**
Download	
• 3 Web Clients	**6AV6372-2DF27-0AH0**
• 20 Web Clients	**6AV6372-2DF27-0BH0**
• 60 Web Clients	**6AV6372-2DF27-0CH0**
• Client	**6AV6372-2DF37-0AH0**
• Planning & Forecast	**6AV6372-2DF47-0AH0**
• Acquisition component	**6AV6372-2DF57-0AH0**

	Article No.
SIMATIC Energy Manager PRO SUS [2]	
Standard scope of delivery	
• For max. 100 additional tags through tag packages [2]	**6AV6372-2DF00-0DL0**
• For max. 500 additional tags through tag packages [2]	**6AV6372-2DF00-0FL0**
• For max. 5 000 additional tags through tag packages [2]	**6AV6372-2DF00-0HL0**
• SUS Enterprise (more than 5 000 tags) for more than 5 000 additional tags [2]	**6AV6372-2DF70-0XL0**
Download	
• For max. 100 additional tags through tag packages [2]	**6AV6372-2DF00-0DY0**
• For max. 500 additional tags through tag packages [2]	**6AV6372-2DF00-0FY0**
• For max. 5 000 additional tags through tag packages [2]	**6AV6372-2DF00-0HY0**
• SUS Enterprise (more than 5 000 tags) for more than 5 000 additional tags [2]	**6AV6372-2DF70-0XY0**
SIMATIC B.Data to Energy Manager PRO upgrades	
Standard scope of delivery	
• Up to 100 tags for max. 100 additional tags through tag packages	**6AV6372-2DF07-0DX4**
• Up to 500 tags for max. 500 additional tags through tag packages	**6AV6372-2DF07-0FX4**
• Up to 5 000 tags for max. 5 000 additional tags through tag packages	**6AV6372-2DF07-0HX4**
• More than 5 000 tags (Enterprise) for more than 5 000 additional tags	**6AV6372-2DF77-0XX4**
Download	
• Up to 100 tags for max. 100 additional tags through tag packages	**6AV6372-2DF07-0DH4**
• Up to 500 tags for max. 500 additional tags through tag packages	**6AV6372-2DF07-0FH4**
• Up to 5 000 tags for max. 5 000 additional tags through tag packages	**6AV6372-2DF07-0HH4**
• More than 5 000 tags (Enterprise) for more than 5 000 additional tags	**6AV6372-2DF77-0XH4**
SIMATIC Energy Manager PRO TRIAL	
• Standard scope of delivery	**6AV6372-2DF17-0AX0**

1) The tag packages dynamically expand the number of tags. The total number of tags is increased by the value of the tag package in each case.

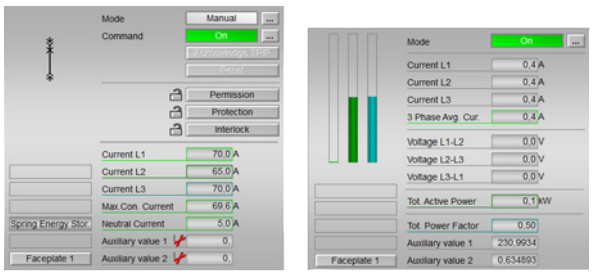
2) The SUS contract runs for 1 year. The contract is automatically extended by a further year unless canceled 3 months prior to expiration.

More information

Additional information is available on the Internet at:

www.siemens.com/simatic-energy-manager-pro

Overview



Faceplates for circuit breakers (left) and measuring devices (right)

The LIBRARY PAC/3WL/3VA SIMATIC PCS 7 block library enables seamless integration of the 3WL/3VA/3VL circuit breakers and 7KM PAC3200/4200 measuring devices in the SIMATIC PCS 7 process control system with driver module, diagnostics block and faceplates.

The blocks executed in the CPUs of the automation systems (controllers) supply the faceplates of the operator stations of the process control system with energy data, generate messages, and manage the link to the SIMATIC PCS 7 Maintenance Station.

Faceplates

The faceplates of the LIBRARY PAC/3WL/3VA SIMATIC PCS 7 block library is used in the operator stations of the process control system as a user interface for the supported measuring devices and circuit breakers. Technologically relevant values and functions of these devices can thus be displayed and used as SIMATIC PCS 7 objects.

System-side bidirectional communication links between faceplates and blocks as well as between blocks, measuring devices and circuit breakers support the display of values in the faceplates and forwarding of input to the devices.

Note:

The LIBRARY PAC/3WL/3VA SIMATIC PCS 7 can be used in combination with SIMATIC PCS 7 V8.x and V9.0. It supports all operating systems of these system versions.

Function

- Full integration of 7KM PAC3200/4200 measuring devices and the 3WL/3VA/3VL circuit breakers in the SIMATIC PCS 7 process control system
- Connection of all devices via PROFIBUS DPV1 possible
- 7KM PAC3200/4200 measuring devices and 3VA2/3VA6 circuit breakers can be integrated via PROFINET
- 7KM PAC4200 measuring device can be used within functional scope of 7KM PAC3200 measuring device
- Cyclic and acyclic communication (for pure visualization tasks)
- Input of limits for monitoring by the driver block
- Resetting of values on the device (min./max. values)
- Remote switching of the 3WL and 3VL circuit breakers
- Device monitoring and reading of maintenance information
- Automatic information in event of overload, short-circuit or fault
- Read-out and display of device data

Ordering data

Ordering data	Article No.
Block library for 7KM PAC3200/ 4200 measuring devices and 3WL/3VA/3VL circuit breakers	
LIBRARY PAC/3WL/3VA SIMATIC PCS 7 AS blocks and faceplates for integration of the 3WL/3VA/3VL circuit breakers and 7KM PAC3200/4200 measuring devices in SIMATIC PCS 7 V8.x and V9.0 (1x required for each SIMATIC PCS 7 operator station in single station / server), comprising: • Engineering license for a SIMATIC PCS 7 operator station in single station/server version • Runtime license for one automation system (1x required for each automation system, additional AS Runtime licenses can be ordered separately) Engineering and runtime software, software class A, 2 languages (German, English), single license for one installation Delivery package: software and electronic documentation on CD, engineering and runtime licenses as Certificate of License	**3ZS2787-1CC30-0YG0**
AS runtime license for LIBRARY PAC/3WL/3VA SIMATIC PCS 7 For each automation system Runtime software, software class A, 2 languages (English, German), single license for one installation Delivery package: runtime license as Certificate of License without software or documentation	**3ZS2787-1CC30-6YH0**

More information

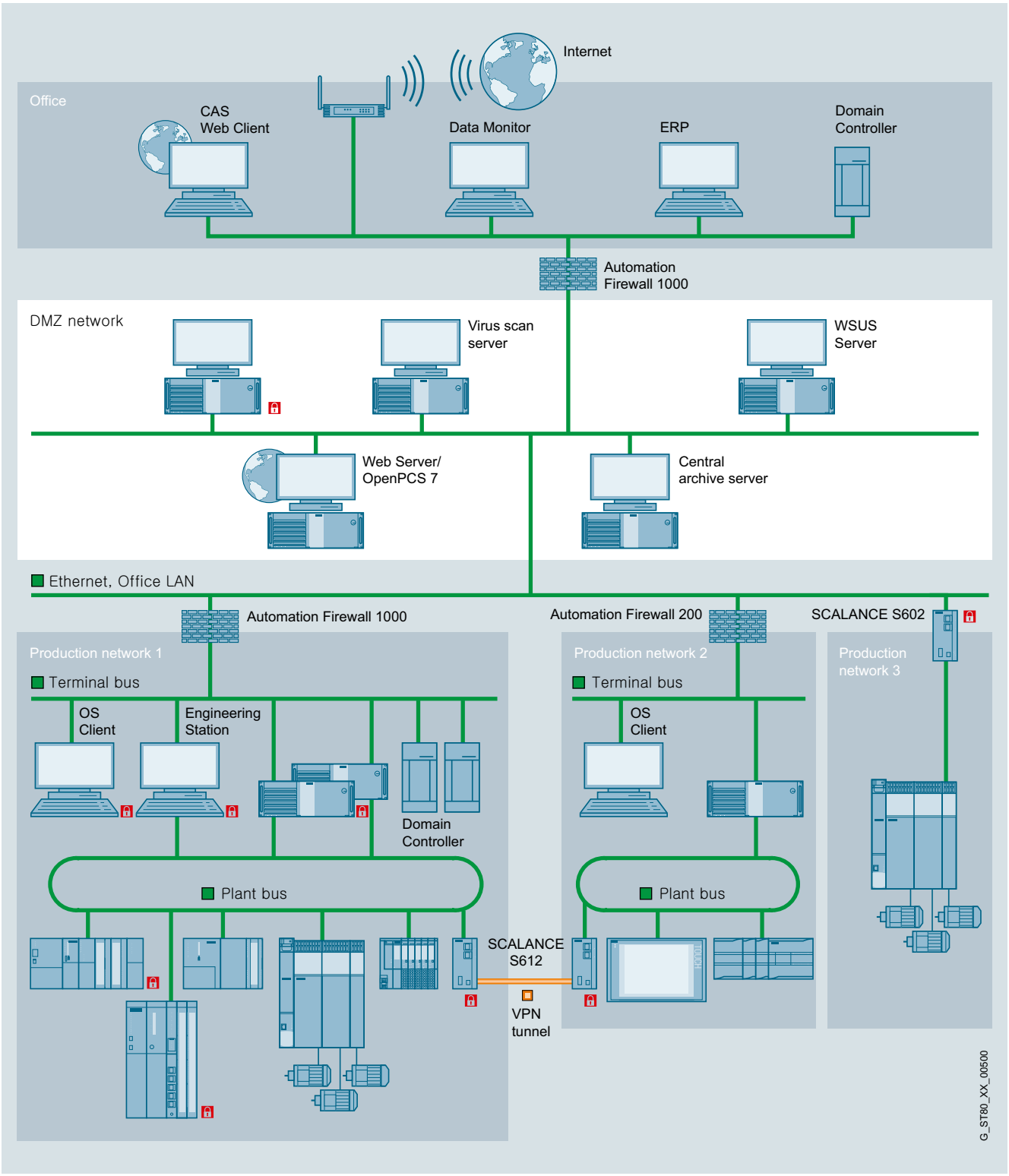
Siemens AG
Energy Management Division
Low Voltage & Products
Nuremberg

Tel.: +49 911 895-7222
Fax: +49 911 895-7223

Support Request:
http://support.industry.siemens.com/My/ww/en/requests

You can find additional information on the Internet at:
www.siemens.com/lowvoltage

Overview



Overview (continued)

The availability and security of production plants is of great importance in industrial environments. Integration of the process control system into the corporate network increases the risk of damage by viruses or malware.

In order to avoid production failures and downtimes, data traffic between the networks must be checked, analyzed and selectively approved without impairing the function of the process control system. Only in this way is it possible to provide optimum protection for the plant without impairing productivity. Firewalls with supplementary services are most appropriate for this.

The Automation Firewall from Siemens is a tested and validated standard firewall available in two performance classes (Automation Firewall 200 and 1000). It has been tuned for use with SIMATIC PCS 7 and WinCC.

The Automation Firewall works excellently with SIMATIC NET communication products. It features comprehensive hardware and software functions for SIMATIC PCS 7 and WinCC projects, e.g.:

- Stateful Inspection packet filter
- Application layer firewall
- VPN gateway
- Intrusion Detection System (based on Suricata IDS)
- Web proxy
- Industrial Wizard

The value of the Automation Firewall is increased even further by integrated services, e.g.:

- Hotline support
- Replacement service
- Software Update Service

Depending on the plant configuration and size, the Automation Firewall is preferably used as:

- Three-homed firewall for small to medium-sized plants with minimal perimeter network
- Front and back firewall for maximum protection in larger plants with extensive perimeter network

Note:

Use of the Automation Firewall 200 or 1000 is independent of the version of the SIMATIC PCS 7 process control system on which the process control installation is based.

Design

Automation Firewall 200/1000

Automation Firewall 200 and 1000 differ as follows:

Type	Automation Firewall 200	Automation Firewall 1000
		
Position	Entry-level variants for small systems, SecureGUARD Communication Gateway license	QuadCore variants for medium-sized and large systems, SecureGUARD Communication Gateway license
Form factor	19", 1 HM	19", 1 HM
Drives	1 × SATA SSD	2 × SATA SSD RAID1
Ethernet interfaces	4 × 10/100/1000 NIC	4 × 10/100/1000 NIC
Suitable for:		
• Data volume	Low	Medium to large
• Frequency of data transfer	Sporadic	Continuous
• Additional utilities supported	WSUS, antivirus server in the perimeter network	WSUS, Antivirus server, Data Historian, Web server, OPC server in the perimeter network

Additional services

- Perimeter Firewall installation
  - Planning and implementation of firewall configuration
  - Integration and startup
  - Preparation of customer documentation
- Perimeter Firewall Management
  - Continuous monitoring of functionality and up-to-dateness of firewall solution
  - Services for signaling critical statuses in the system network
  - Monthly reporting on security and system status
  - Customer-specific update of the firewall configuration
- Customer-specific firewall solutions for special requirements

Ordering data

Automation Firewall 200 including standard service contract for 1 year Intel Multicore CPU 64-bit, Main memory 8 GB, 1 × SSD, 4 × 10/100/1000 NIC, SecureGUARD Communication Gateway license	**9AS1424-1BA11-1AA1**
Service contract for Automation Firewall 200, contract extension for 1 year Note: Max. total term 5 years	**9AS1424-1BA61-1AA1**
Automation Firewall 1000 including standard service contract for 1 year Intel QuadCore XEON CPU, Main memory 8 GB, 2 × SSD RAID1, 4 × 10/100/1000 NIC, Remote management, SecureGUARD Communication Gateway license	**9AS1424-1BB11-1AA1**
Service contract for Automation Firewall 1000, contract extension for 1 year Note: Max. total term 5 years	**9AS1424-1BB61-1AA1**
Perimeter firewall installation Service for planning and implementation of firewall configuration, integration and commissioning, preparation of customer documentation Note: Additional travel times and costs will be charged for on-site visits.	**9AS1433-1AA11-1AB3**
Perimeter Firewall Management	**9AS1433-1AA11-1AC2**
Customized firewall solutions	On request

More information

Support in selecting the firewall as well as information on integrated and additional services

Customer Service

E-mail: industrialsecurity.i@siemens.com

9

Overview

Introduction

In many applications it is becoming increasingly important to synchronize the time in plants and systems. Only if all network stations are supplied cyclically with a reliable time frame from a central location can optimum process operation be ensured. This results in benefits for the plant operator such as increased operational reliability, the possibility of tracing system faults in a targeted manner, increased economic efficiency due to fewer production outages, and increased productivity in manufacture.

For this purpose, the SICLOCK product family offers a comprehensive range of optimally matched components for setting up highly reliable time synchronization systems.

Typical industries and fields of application for time synchronization systems are:

- Factory/process automation
- Power supply
- Building automation
- Transportation systems
- Safety engineering
- IT systems

The SICLOCK product range comprises the following product groups:

- Wireless receivers
- Central plant clocks
- Pulse converters
- Accessories

SICLOCK time synchronization

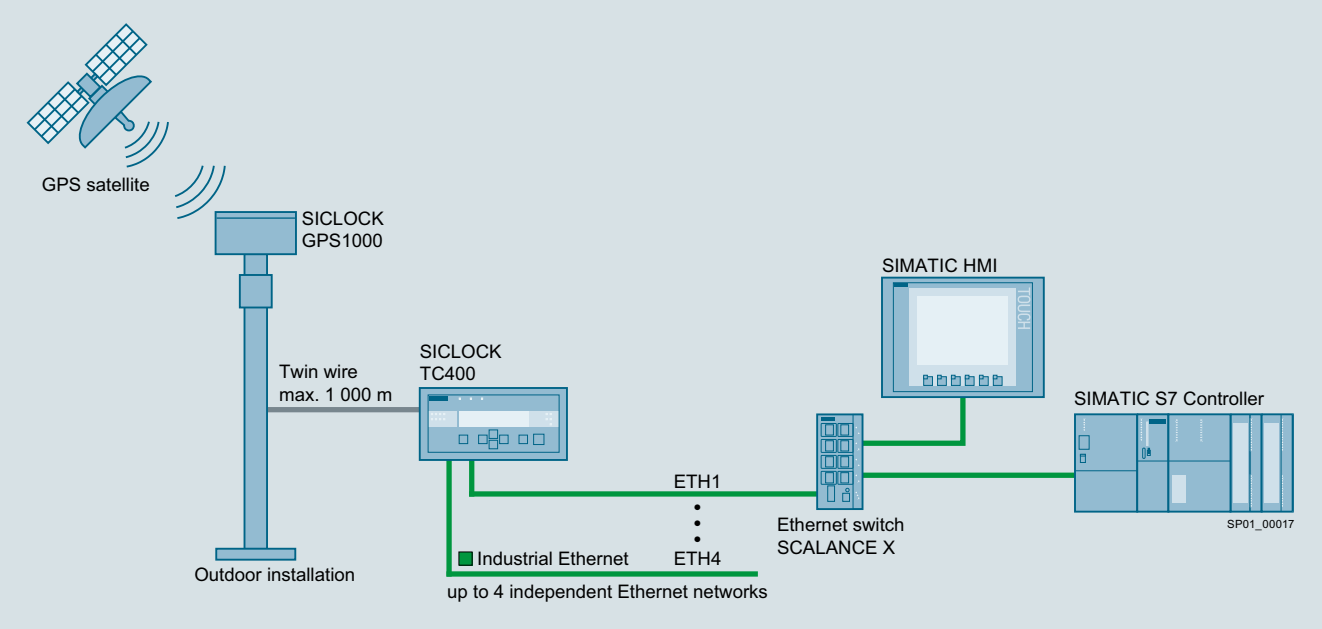
System description

Satellites or long-wave transmitters are used as primary time sources. The SICLOCK wireless receivers (e.g. SICLOCK GPS1000) receive these high-frequency signals and transmit the demodulated time signal to the central plant clock via a robust and interference-proof 2-wire connection. The GPS2000 replaces the GPS1000.

The central plant clock converts the time signal into an Ethernet-based network frame (e.g. NTP, SIMATIC procedure) and thus provides all connected network stations with precise and uniform time information.

Furthermore, in the event of failure or loss of reception from the primary time source, the central plant clock ensures stable continuation of the clock time and tracking of the system time without time jumps as soon as reception is restored.

Overview (continued)

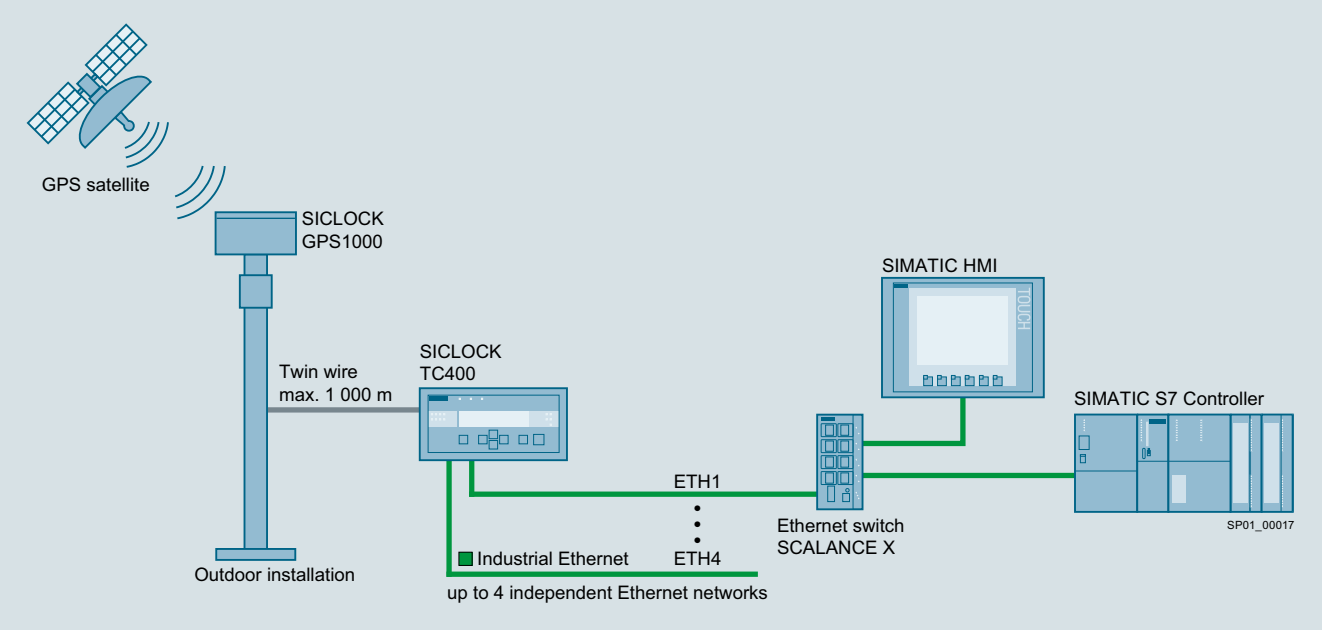


SICLOCK TC400 central plant clock with SICLOCK GPS1000 wireless receiver

Application

Application examples

System with GPS reception



SICLOCK TC400 central plant clock with SICLOCK GPS1000 wireless receiver

The SICLOCK GPS1000 wireless receiver (Article No. 2XV9450-1AR84) is used in this example. The wireless receiver is mounted outdoors with "visual contact" to the navigation satellites for optimum reception quality.

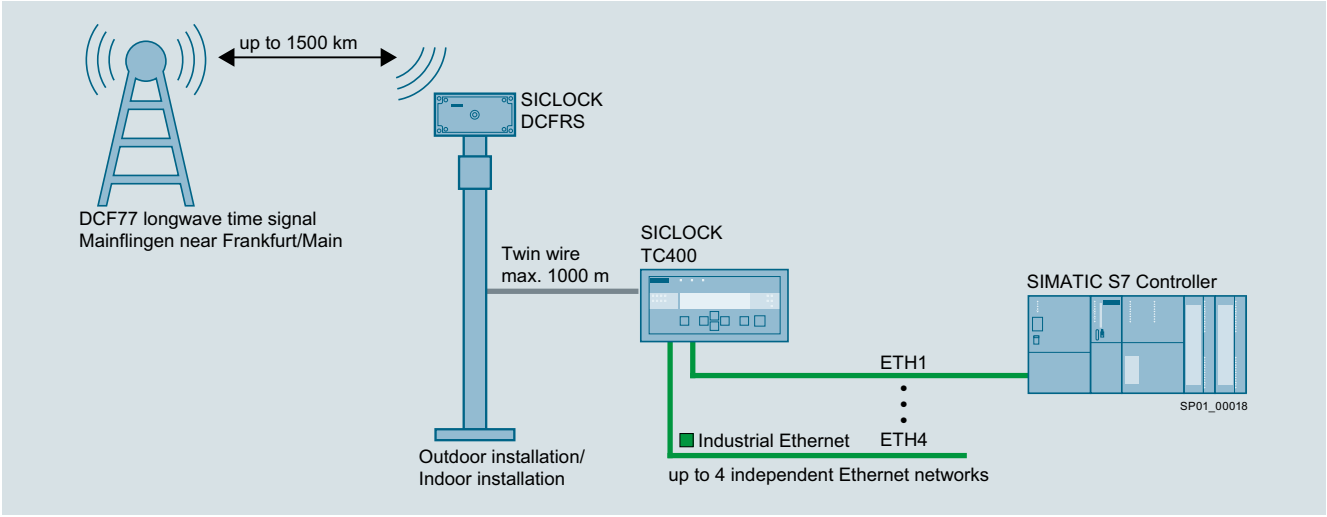
The line current method (TTY - 20 mA) used in the SICLOCK system permits distances of up to one kilometer between the wireless receiver and the central plant clock and also supplies the receiver with power, which eliminates the need for any additional power supply components. This makes it possible to install the central plant clock at a central location, even in plants spread over a very large area.

The SICLOCK TC400 central plant clock shown in the example features four 10/100 Mbit Ethernet interfaces for supplying up to four independent IP networks. The SICLOCK TC100 central plant clock with one Ethernet interface has been designed for smaller, cost-sensitive plants.

Application (continued)

The central plant clocks do not have Ethernet switching functionality for safety reasons. SIMATIC NET SCALANCE X switches are recommended for this purpose, see http://support.automation.siemens.com/WW/view/en/18689247/133200.

System with DCF77 reception



SICLOCK TC400 central plant clock with SICLOCK DCFRS wireless receiver

As an alternative to receiving satellite signals, the DCF77 time signal transmitter can be used as primary time source. The transmitter is located near Frankfurt am Main and transmits longwave signals at a frequency of 77.5 kHz. Under normal conditions, reception is possible up to a distance of about 1 500 km from the transmitter.

The SICLOCK DCFRS wireless receiver with TTY output (Article No. 2XV9450-1AR16) is used in this application. Here too, a separate power supply is not required if a SICLOCK TC100 or SICLOCK TC400 central plant clock is used.

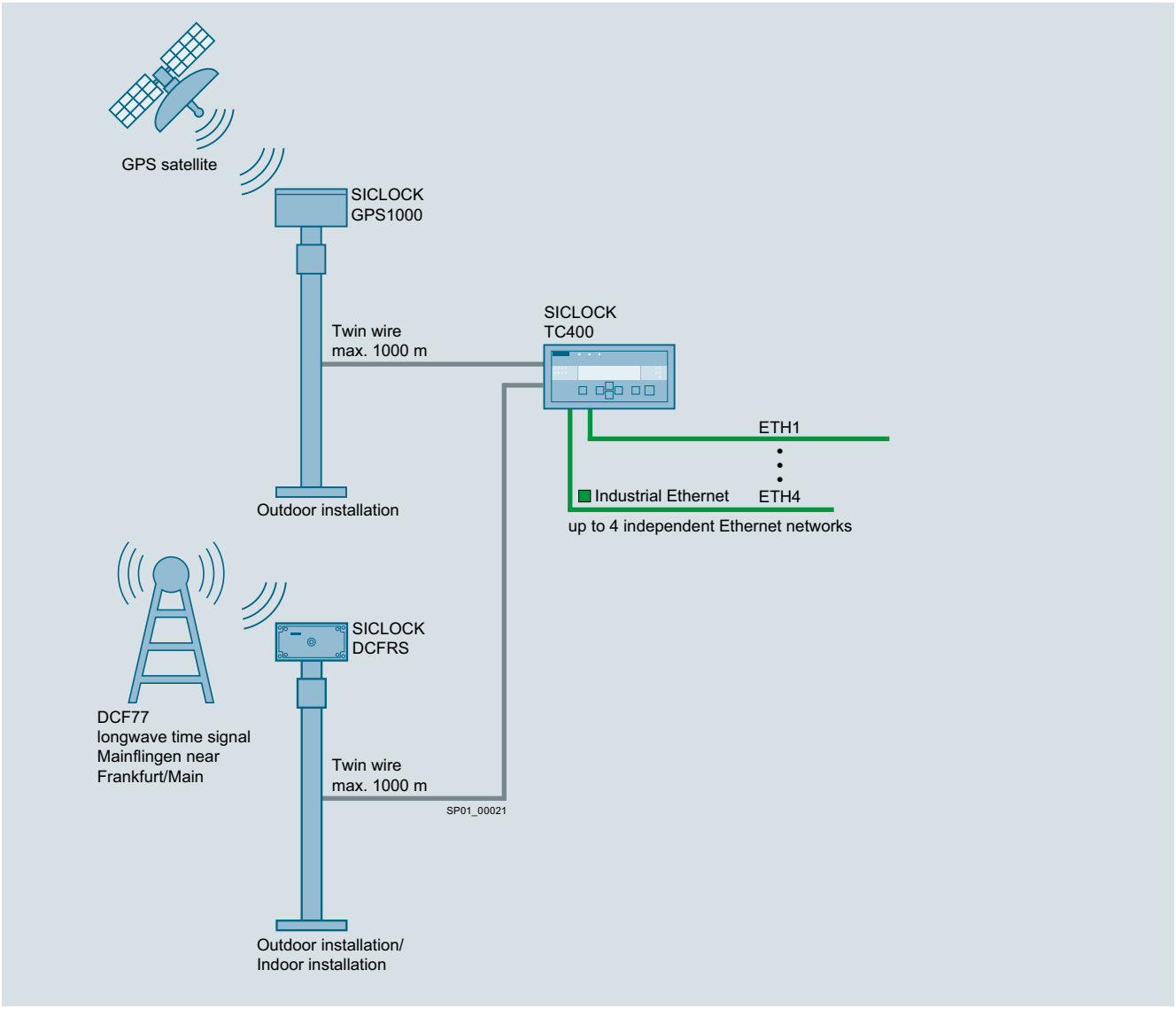
The advantages over satellite reception are lower costs and the option of mounting the receiver inside a building. The last advantage is especially useful if outdoor installation is not advisable, e.g. due to risk of vandalism.

Application (continued)

Redundant modes

Due to the importance of having a reliable time supply in many demanding applications, the SICLOCK system offers optional redundant modes to further increase plant reliability. The redundancy can be on the reception side, the network side, or even be combined with a redundant central plant clock for highly sensitive applications.

Reception-side redundancy

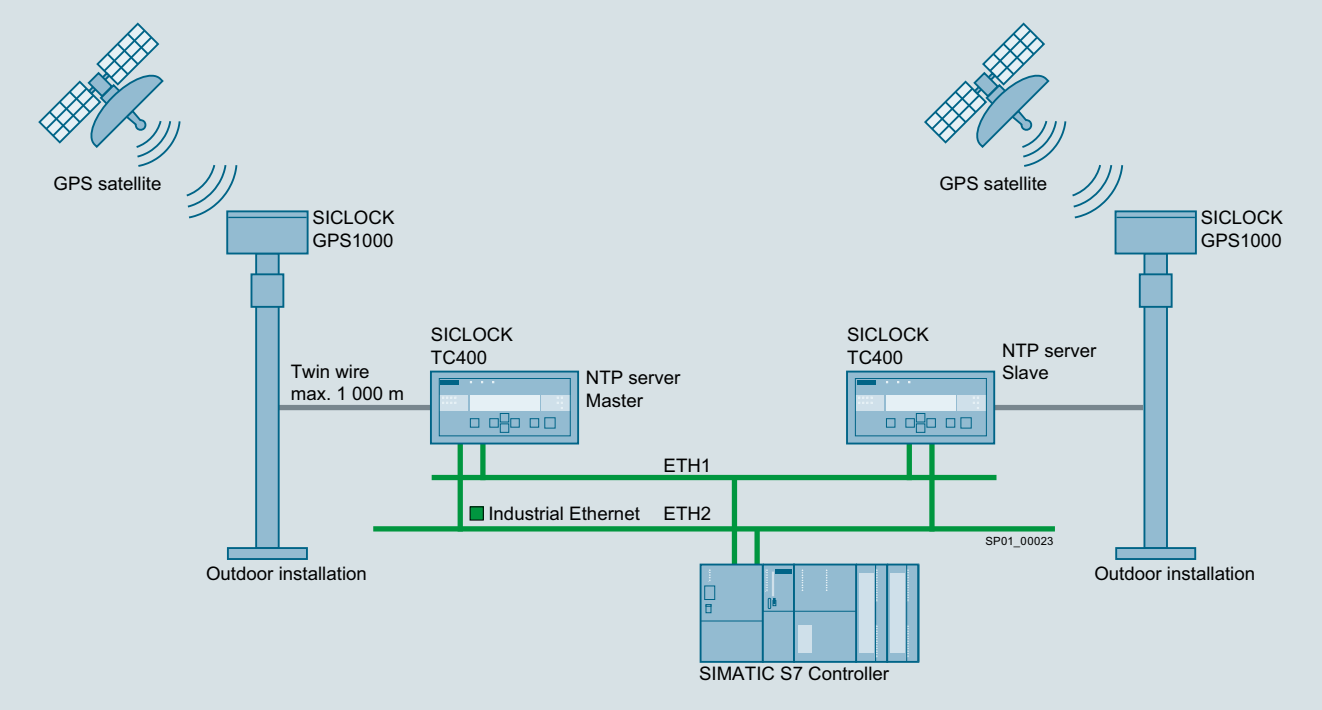


SICLOCK TC400 central plant clock with SICLOCK GPS1000 and SICLOCK DCFRS wireless receivers

In this application, SICLOCK GPS1000 and SICLOCK DCFRS wireless receivers are used in parallel. External time information can continue to be received even if one of the two primary time sources fails. The SICLOCK TC100 and SICLOCK TC400 central plant clocks each have two inputs for the wireless receivers.

Application (continued)

Highly redundant system



SICLOCK TC400 central plant clocks with SICLOCK GPS1000 wireless receiver

This application can satisfy the highest redundancy requirements. The system uses two SICLOCK TC400 central plant clocks, each with separate SICLOCK GPS1000 wireless receivers

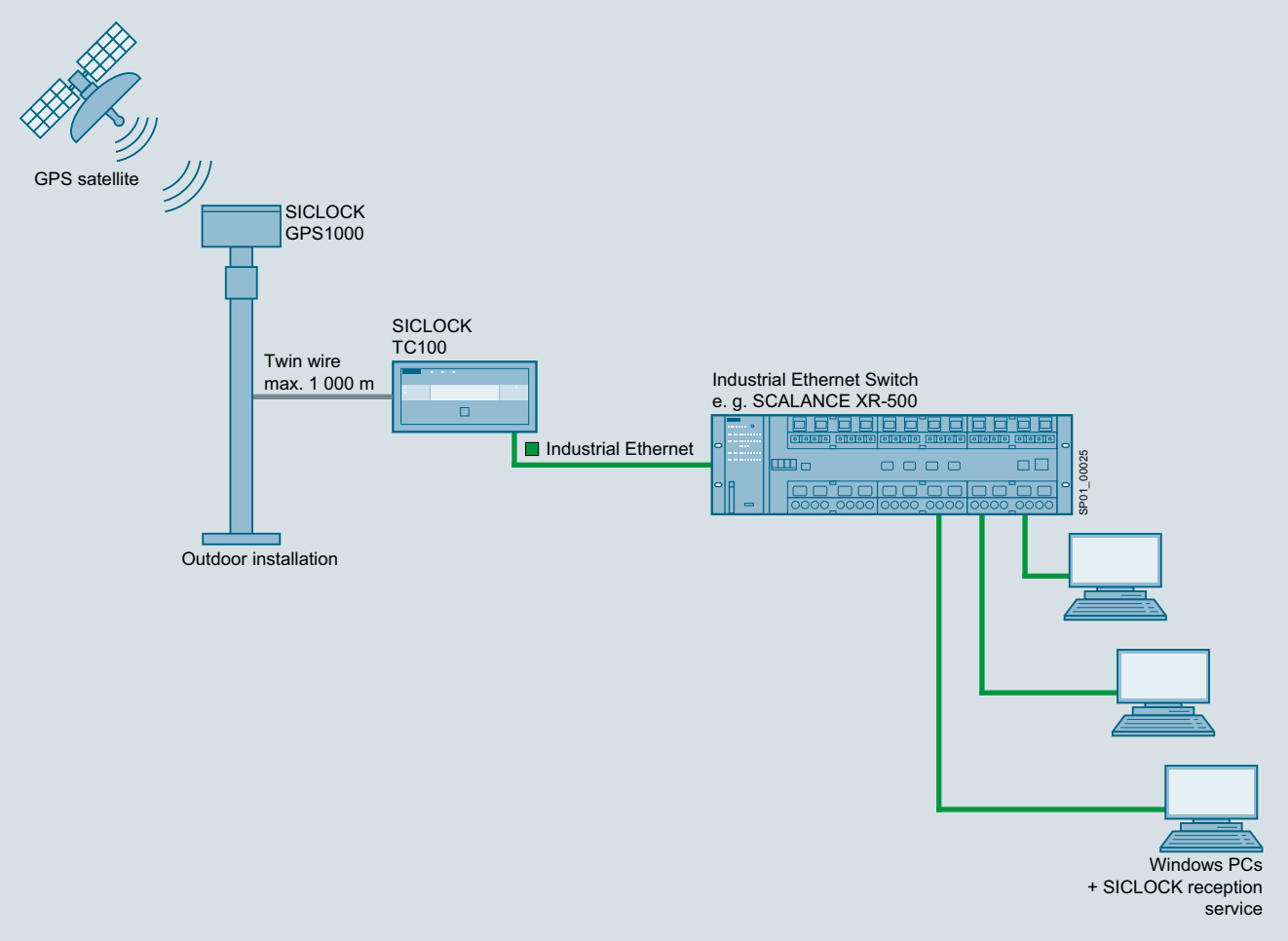
One central plant clock is parameterized as the NTP server master, the other as the NTP server slave. The NTP server slave takes over if the NTP master or the connected wireless receiver fails.

If SICLOCK GPS1000 wireless receivers are used, they should be mounted as far away from each other as possible so that the receiver with the better reception conditions can be used and, for example, to avoid damage to both receivers in the event of a lightning strike. Instead of using two GPS wireless receivers, one SICLOCK DCFRS wireless receiver can of course be used.

Application (continued)

Synchronization of IT networks

IT network with a central plant clock

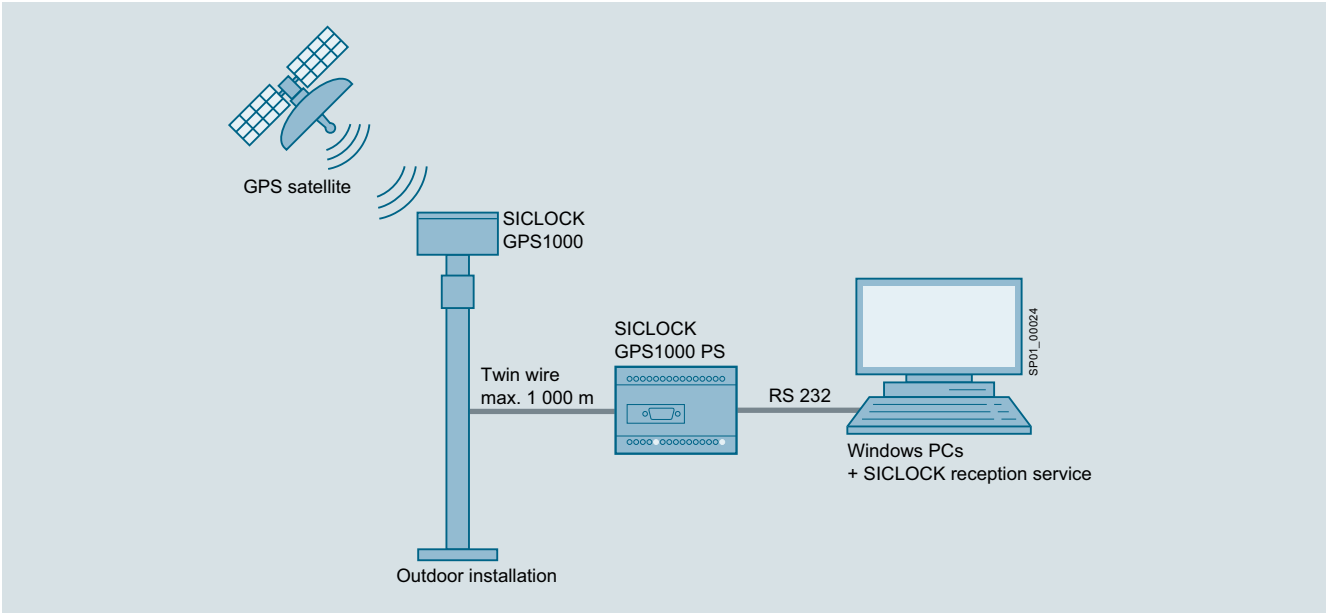


SICLOCK TC100 central plant clock with SICLOCK GPS1000 wireless receiver: Synchronization of IT systems (with failure protection)

This application can be used for the synchronization of a large number of IT devices. The cost-optimized SICLOCK TC100 central plant clock can be used if all the stations that have to be synchronized belong to the same IP subnet. A wide range of SCALANCE X Ethernet switches is available for selection according to the number of terminal devices to be synchronized; see http://support.automation.siemens.com/WW/view/en/18689247/133200.

Application (continued)

Simple solution without failure protection for the direct supply of clock time to IT systems



SICLOCK GPS1000 PS pulse converter with SICLOCK GPS1000 wireless receiver, synchronization of IT systems (without failure protection)

Direct connection to an IT system can be considered in applications with low failure protection requirements.

All of the required components are included in the SICLOCK GPS1000 package (Article No. 2XV9450-1AR82). The scope of delivery includes the SICLOCK GPS1000 wireless receiver with antenna base, the SICLOCK GPS1000 PS pulse converter, and a receiving software that runs on Windows systems.

More information

For more information, go to

- www.siemens.com/siclock

Central plant clocks

Overview

The central plant clocks evaluate the clock time data that is transmitted from the wireless receiver and generate diverse output signals in order to synchronize the connected I/O devices.

If the wireless receiver fails or signal transmission is interrupted, the central plant clocks switch over to their internal high-precision quartz system and thus ensure reliable tracking of the clock time. When the input signal is available again, the central plant clock adjusts any time differences that may have occurred without time jumps by means of "microsteps".

SICLOCK TC100 and SICLOCK TC400 central plant clocks

Inputs and outputs

The high-precision SICLOCK TC100 and SICLOCK TC400 central plant clocks have one (SICLOCK TC100) or two (SICLOCK TC400) inputs for connection to wireless receivers.

The central plant clocks have one (SICLOCK TC100) or four (SICLOCK TC400) independent 10/100 Mbit Ethernet interfaces.

The network stations are synchronized using the proven SNTP standard and by means of the SIMATIC procedure.

The SICLOCK central plant clocks have two relay outputs for signaling alarms or warnings.

Alternatively and/or in addition, two TTY point-to-point connections (20 mA current interface) or one RS 422 (5 V level) connection can be set up for the SICLOCK TC400 central plant clock.

Operation

Parameterization of the interfaces, setting of the signal types, redundancy modes, and read-out of the status messages stored in the device are conveniently implemented via the integrated web interface.

LEDs and a display indicate operating states and show any error messages, which can also be read out via the web interface.

Note:

Java Runtime software V1.4.0 or higher from Oracle is required on the PC used for this if you want to use the optional comfort parameter assignment features. The software is not included in the scope of delivery, and must be purchased separately.

Technical specifications

Article number	**2XV9450-2AR22** SICLOCK_TC100_Device	**2XV9450-2AR01** SICLOCK_TC400_Single device
General information		
Product brand name	SICLOCK	
Product type designation	TC100	TC400
Installation type/mounting		
Mounting type	DIN rail 35 mm or 19 inch rack	
Supply voltage		
Relative negative tolerance	15 %	
Relative positive tolerance	20 %	
Input current		
Continuous rated current, max.	0.5 A	0.7 A
Operating current of fuse protection at input, slow-blow	1 A	
Output current		
Design of outputs for supply of the antenna	20 mA to 40 mA at 48 V	
Power		
Active power input, max.	9 W	15 W
Power loss		
Power loss, typ.	6 W	7.5 W
Time of day		
Design of the inputs	1x GPS1000 / DCFRS time input 48 V / 40 mA	2x GPS1000 / DCFRS time input 48 V / 40 mA
Clock		
• Time deviation relative to GPS signal, max.	50 µs	
• Time deviation relative to DCF77 signal, max.	1 000 µs	
• Time deviation of the GPS signal with jitter, max.	200 ns	
• Relative accuracy on loss of GPS signal, max.	0.0001 %	
• Relative accuracy on loss of DCF77 signal, max.	0.000001 %	
• Relative accuracy on power supply failure, max.	0.0004 %	
• Clock error compensation relative to 1 s	50 µs	
Digital outputs		
Relay outputs		
• Number of relay outputs		
- as NC contact for ALARM	1	
- as NC contact for WARNING	1	
Switching capacity of contacts		
- Current carrying capacity at 48 V DC	0.06 A	
Interfaces		
Number of industrial Ethernet interfaces	1	4
Number of 20 mA interfaces (TTY)		
• As output		2
Number of RS 422 interfaces		
• As output		1
Industrial Ethernet		
• Transmission rate, min.	10 Mbit/s	
• Transmission rate, max.	100 Mbit/s	
Interface types		
RJ 45 (Ethernet)		
• Autonegotiation	Yes	
Protocols		
Bus protocol/transmission protocol	(S)NTP, DCF77	(S)NTP, DCF77, pulses, cycles, message frames
Potential separation		
between Ethernet and electronics	Yes	

Technical specifications (continued)

Article number	**2XV9450-2AR22** SICLOCK_TC100_Device	**2XV9450-2AR01** SICLOCK_TC400_Single device
Degree and class of protection		
IP degree of protection	IP20	
Equipment protection class	III (according to EN 60536)	
Standards, approvals, certificates		
Standard for EMC	EN 55022 Class A, FCC Class, EN 55024	
Standard for ambient influences		
• During operation	EN 60721-3-3 class 3KS	
• During storage	EN 60721-3-2 class 2K4	
• Relative humidity during operation	IEC 60068-2-78, IEC 60068-2-30	
• Relative humidity during storage	IEC 60068-2-78, IEC 60068-2-30	
Ambient conditions		
Ambient temperature during operation		
• min.	0 °C	
• max.	55 °C	
• Permissible temperature change relative to one hour (without condensation)	10 °C	
Ambient temperature during storage/transportation		
• Storage, min.	-40 °C	
• Storage, max.	70 °C	
• Permissible temperature change relative to one hour (without condensation)	20 °C	
• Transportation, min.	-40 °C	
• Transportation, max.	70 °C	
Air pressure acc. to IEC 60068-2-13		
• permissible range, lower limit	795 hPa	
• permissible range, upper limit	1 080 hPa	
• Installation altitude, min.	-1 000 m	
• Installation altitude, max.	2 000 m	
Relative humidity		
• Operation at 25 ? without condensation, min.	10 %	
• Operation at 25 ? without condensation, max.	95 %	
• Storage at 25 ? without condensation, min.	10 %	
• Storage at 25 ? without condensation, max.	95 %	
Mechanics/material		
Service life		
• Battery (during operation), min.	10 y	12 y
• Battery unconnected (during storage), min.	10 y	12 y
• Battery connected (during storage), min.	6 y	
Dimensions		
Width	180 mm	
Height	89 mm	
Depth	47 mm	

Ordering data

	Article No.
Central plant clock	
A wireless receiver supplies the central plant clocks with time data; these then generate signals which are used to synchronize the connected I/O devices.	
SICLOCK TC400 central plant clock, single device • 4 independent Ethernet interfaces • 2 DCF77 inputs for antennas • 2 DCF77 outputs for redundancy and extensions	**2XV9450-2AR01**
SICLOCK TC100 central plant clock, single device • 1 Ethernet interface • 1 DCF77 input for antennas	**2XV9450-2AR22**

More information

For further product details, refer to the

- "SICLOCK TC100 Central Plant Clock" operating instructions
  http://support.automation.siemens.com/WW/view/en/73996805
- "SICLOCK TC400 Central Plant Clock" operating instructions
  http://support.automation.siemens.com/WW/view/en/73996850

GPS receivers

Overview

Wireless receiver SICLOCK GPS2000 with antenna foot

The SICLOCK GPS2000 wireless receiver is designed to receive signals on the 1.575 GHz frequency from the GPS satellite system. The wireless receiver generates the time information (UTC – coordinated universal time) from this high frequency signal and converts it on the output side into the DCF77 time signal. The wireless receiver can be used all over the world.

The SICLOCK GPS2000 wireless receiver is designed for direct connection to the SICLOCK TC100 and SICLOCK TC400 central plant clocks. The line current method used permits a distance of up to one kilometer between the wireless receiver and the central plant clock.

The antenna has to be installed outdoors for optimum reception of the satellite signals. The wireless receiver needs no parameter assignment or maintenance and, when used with the SICLOCK TC100 or SICLOCK TC400 central plant clocks, is supplied by them with the required operational energy.

The 2XV9450-1AR82-0AA0 package is available for the direct synchronization of PCs. This package also includes the SICLOCK GPS1000 PS pulse converter for level conversion and the receiving software, which runs on PCs.

Note:

Orders of SICLOCK GPS1000 and Bundles with GPS1000 will be delivered with the corresponding SICLOCK GPS2000 product. SICLOCK GPS2000 is fully compatible with GPS1000. SICLOCK GPS2000 will be delivered as replacement if repairs are necessary.

Ordering data

	Article No.
GPS receivers	
SICLOCK GPS2000	
GPS radio clock for the time synchronization of PCs, programmable controllers, as well as the SICLOCK TC100 and SICLOCK TC400 central plant clocks;	
• Single device with 2.5 m connecting cable	**2XV9450-1AR88-0AA0**
• Single device with 20 m connecting cable	**2XV9450-1AR88-0AB0**
SICLOCK GPS2000 package with lightning protection	**2XV9450-1AR84-0AA0**
GPS radio clock for the time synchronization of PCs, programmable controllers, as well as the SICLOCK TC100 and SICLOCK TC400 central plant clocks;	
Package comprises:	
• GPS2000 wireless receiver with integrated electronics 2XV9450-1AR88-0AA0	
• 2.5 m connecting cable with end sleeves	
• Lightning protection module 2XV9450-1AR83	
SICLOCK GPS2000 package with power supply	**2XV9450-1AR82-0AA0**
GPS radio clock for the time synchronization of PCs as well as programmable controllers via RS 232 interface; in industrial environments with high levels of interference; for distances up to 1 000 m between the antenna and the device	
Package comprises:	
• SICLOCK GPS2000 GPS wireless receiver with 2.5 m connecting cable and lightning protection, extendable to 1 000 m	
• Lightning protection module 2XV9450-1AR83	
• SICLOCK GPS1000 power supply 2XV9450-1AR85-0AA2	
• Antenna holding frame for universal mounting	
• Distribution socket for connecting the control cable	
SICLOCK GPS2000 package with 20 m connecting cable	**2XV9450-2AR82-0AB0**
GPS radio clock for time synchronization with 20 m connecting cable for combination with GPS1000PS, TC100, TC400, PCON and EOPC;	
Package comprises:	
• GPS2000 wireless receiver with integrated electronics	
• 20 m connecting cable with end sleeves, extendable to 1 000 m	
• Lightning protection module 2XV9450-1AR83	
• Antenna holding frame for universal mounting	
• Distribution socket for connecting the control cable	
• Connecting cable to PC COM port (9-pin sub D)	
• CD containing operating instructions (German/English)	

Overview

The pulse converter is available in two versions:

- SICLOCK PCON
- SICLOCK EOPC (as from July 22, 2017 available as spare part only)

PCON pulse converter

SICLOCK PCON pulse converter

The SICLOCK PCON is a single-channel, electrical-optical pulse converter. It enables electrical and optical time frames and pulses to be distributed.

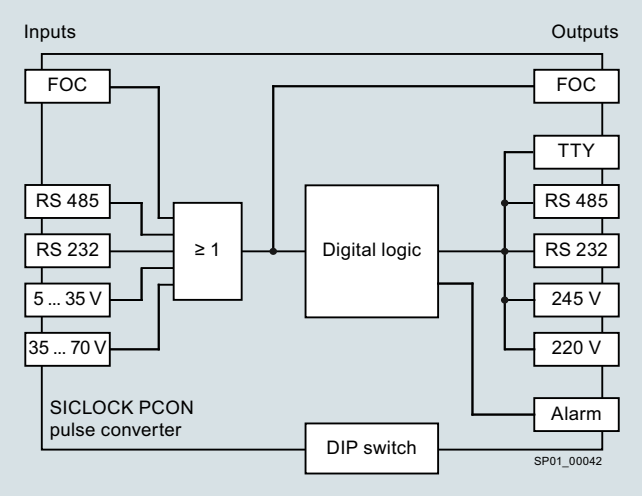
The device has three inputs for electrical signals (RS 422, RS 232, etc.), one optical input, as well as five electrical outputs and one optical output. By using fiber-optic cables, longer distances can be bridged with very high interference immunity.

The SICLOCK PCON pulse converter can be operated in two modes:

- In transparent mode, the input signal is output at all outputs without any change.
- In pulse mode, an edge change at the input triggers a pulse with parameterizable length at all outputs.

The device is easily parameterized by means of DIP switches located directly on the device.

Inputs X1	Outputs X2
RS 422 (non-isolated)	RS 422 (non-isolated)
RS 232 (non-isolated)	RS 232 (non-isolated)
Pulse input 5 ... 35 V or 5 ... 70 V	Pulse output 24 V (non-isolated)
	Pulse output 24 ... 220 V (isolated)
FOC	FOC
BFOC connection system	BFOC connection system
	TTY 20 mA current interface



SICLOCK PCON pulse converter (functional diagram)

Pulse converters

Technical specifications

Article number	**2XV9450-1AR63-1SA3** SICLOCK PCON E10433-E0415-H100
General information	
Product brand name	SICLOCK
Product type designation	PCON 24 - 60 V AC/DC, multimode
Product designation	Pulse converter
Installation type/mounting	
Mounting type	DIN rail 35 mm
Supply voltage	
permissible range, lower limit (DC)	20.4 V
permissible range, upper limit (DC)	72 V
permissible range, lower limit (AC)	20.4 V
permissible range, upper limit (AC)	57.6 V
Digital inputs	
Number of voltage inputs	1
Design of voltage inputs	5 - 35 V or 5 - 70 V
Number of inputs for FOC	1
Digital outputs	
Number of outputs (24 V DC)	1
Number of outputs (24 V ... 230 V AC/DC)	1
Number of outputs for FOC	1
Output current	
• For output (24 V DC)	0.8 A
• For output (24 V ... 230 V AC/DC)	0.1 A
Relay outputs	
• Number of relay outputs	
- As changeover contact for ALARM	1
Interfaces	
Number of RS 485 interfaces	
• As input	1
• As output	1
Number of RS 232 interfaces	
• As input	1
• As output	1
Number of 20 mA interfaces (TTY)	
• As output	1
Degree and class of protection	
IP degree of protection	IP40
Ambient conditions	
Ambient temperature during operation	
• min.	0 °C
• max.	50 °C
Connection method	
Design of the FOC connection	BFOC
Mechanics/material	
Design of the FOC	Glass fiber 62.5/126 µm, plastic 1 000 µm
Material of optical fiber	Glass, plastic
Dimensions	
Width	100 mm
Height	70 mm
Depth	120 mm

Ordering data

	Article No.
Pulse converters	
SICLOCK PCON Single-channel, electrical-optical pulse converter for industrial applications, 820 nm, 24 ... 230 V AC/DC, with multimode fiber-optic connection	**2XV9450-1AR63-1SA3**

More information

For further product details, refer to the

- "SICLOCK PCON" operating instructions
- http://support.automation.siemens.com/WW/view/en/73996703

Overview

Software

For less complex applications, the wireless receivers can even be operated without central plant clocks.

Two software packages are available for such applications to process the time information on Windows computers or in a SIMATIC PLC.

- 2XV9450-1AR28: SICLOCK DCF77 receiving service software for Windows XP, Windows Vista, Windows 7, Windows Server 2003/2008/2008 R2

Lightning protection

The 2XV9450-1AR83 lightning protection element is integrated by default into the connecting cable downstream of the wireless receiver and protects the components connected to it against overvoltage caused by lightning strikes.

Mounting hardware

For easy installation in 19" rack units, a 2XV9450-2AR81 mounting frame for two SICLOCK TC100 and/or SICLOCK TC400 central plant clocks each is available.

Ordering data

	Article No.
Accessories	
Software	
• Receiving service software for Windows	**2XV9450-1AR28**
Lightning protection for antenna cable	**2XV9450-1AR83**
Lightning protection for TTY connecting cable for SICLOCK GPS1000 or SICLOCK DCFRS wireless receivers	
Mounting frame for SICLOCK TC100 and SICLOCK TC400 central plant clocks	**2XV9450-2AR81**

Technical specifications

Article number	**2XV9450-2AR81**	**2XV9450-1AR28**	**2XV9450-1AR83**
	SICLOCK TC400 19" Materialsatz	SICLOCK TREIBER DCF77 FUER WINDOWS	SICLOCK GPS1000 Lightning Protection
General information			
Product brand name	SICLOCK		
Product designation	19 inch frame for SICLOCK TC400 / TC100	DCF77 receiver software for Windows	Lightning protection for GPS1000 or DCFRS radio clock
Installation type/mounting			
19-inch installation	Yes		
Number of modular height units	3		
Time of day			
Signal type			
• At the input			DCF77
• At the output			DCF77
Digital inputs			
Number of digital inputs			1
Digital outputs			
Number of digital outputs			1
Operating systems			
Required operating system		Microsoft Windows XP, Windows Vista, Windows 7, Windows Server 2003, Windows Server 2008/2008 R2	

Bundles

Overview

The SICLOCK TC100 and SICLOCK TC400 central plant clocks can be operated with the SICLOCK GPS1000 or SICLOCK DCFRS wireless receivers.
With the bundles you order the complete unit comprising: the central plant clock, the antennas/wireless receivers and the accessories required.

Ordering data	Article No.
Bundles	
SICLOCK TC400 Bundle Complete solution, e.g. for use in PCS 7, package comprises • SICLOCK TC400 • SICLOCK GPS2000 antenna with 2.5 m connecting cable, mounted, extendable to 1 000 m • Antenna frame • Distribution socket • Lightning protection	**2XV9450-2AR10-0AA0**
SICLOCK TC100 Bundle Complete solution, e.g. for use in PCS 7, package comprises • SICLOCK TC100 • SICLOCK GPS2000 antenna with 2.5 m connecting cable, mounted, extendable to 1 000 m • Antenna frame • Distribution socket • Lightning protection	**2XV9450-2AR50-0AA0**

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- for other supplies and/or services the "General Conditions for the Supply of Products and Services of the Electrical and Electronics Industry"[1].
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- for services the "International Terms & Conditions for Services"[1] supplemented by "Software Licensing Conditions"[1] and/or
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An exact explanation of the metal factor can be downloaded at:

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

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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).

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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.

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[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

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Appendix

Notes

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

Interactive Catalog on DVD	*Catalog*
Products for Automation and Drives	**CA 01**

Building Control	
GAMMA Building Control	ET G1

Drive Systems	
SINAMICS G130 Drive Converter Chassis Units SINAMICS G150 Drive Converter Cabinet Units	D 11
SINAMICS GM150, SINAMICS SM150 Medium-Voltage Converters	D 12
Digital: SINAMICS PERFECT HARMONY GH180 Medium-Voltage Air-Cooled Drives (Germany Edition)	*D 15.1*
SINAMICS G180 Converters – Compact Units, Cabinet Systems, Cabinet Units Air-Cooled and Liquid-Cooled	D 18.1
SINAMICS S120 Chassis Format Converter Units SINAMICS S120 Cabinet Modules SINAMICS S150 Converter Cabinet Units	D 21.3
SINAMICS S120 and SIMOTICS	D 21.4
SINAMICS DCM DC Converter, Control Module	D 23.1
SINAMICS Inverters for Single-Axis Drives · Built-In Units	D 31.1
SINAMICS Inverters for Single-Axis Drives · Distributed Inverters	D 31.2
Digital: SINAMICS S210 Servo Drive System	*D 32*
Digital: SINAMICS V90 Basic Servo Drive System	*D 33*
Digital: SINAMICS G120P and SINAMICS G120P Cabinet pump, fan, compressor converters	*D 35*
LOHER VARIO High Voltage Motors Flameproof, Type Series 1PS4, 1PS5, 1MV4 and 1MV5 Frame Size 355 to 1000, Power Range 80 to 7100 kW	D 83.2
Digital: Three-Phase Induction Motors SIMOTICS HV, SIMOTICS TN	*D 84.1*
Digital: Three-Phase Induction Motors SIMOTICS HV	*D 84.3*
High Voltage Three-phase Induction Motors SIMOTICS HV Series A-compact PLUS	D 84.9
Digital: Modular Industrial Generators SIGENTICS M	*D 85.1*
Three-Phase Induction Motors SIMOTICS HV, Series H-compact	D 86.1
Synchronous Motors with Permanent-Magnet Technology, HT-direct	D 86.2
DC Motors	DA 12
SIMOVERT PM Modular Converter Systems	DA 45
MICROMASTER 420/430/440 Inverters	DA 51.2
MICROMASTER 411/COMBIMASTER 411	DA 51.3
Low-Voltage Three-Phase-Motors	
SIMOTOCS S-1FG1 Servo geared motors	D 41
SIMOTICS Low-Voltage Motors	D 81.1
SIMOTICS FD Low-Voltage Motors	D 81.8
LOHER Low-Voltage Motors	D 83.1
Digital: MOTOX Geared Motors	*D 87.1*
SIMOGEAR Geared Motors	MD 50.1
SIMOGEAR Electric-monorail geared motors Light-load and heavy-load applications	MD 50.8
SIMOGEAR Gearboxes with adapter	MD 50.11
Mechanical Driving Machines	
FLENDER Standard Couplings	MD 10.1
FLENDER High Performance Couplings	MD 10.2
FLENDER Backlash-free Couplings	MD 10.3
FLENDER SIP Standard industrial planetary gear units	MD 31.1

Digital: These catalogs are only available as a PDF.

Process Instrumentation and Analytics	*Catalog*
Digital: Field Instruments for Process Automation	*FI 01*
Digital: Display Recorders SIREC D	*MP 20*
Digital: SIPART Controllers and Software	*MP 31*
Products for Weighing Technology	WT 10
Digital: Process Analytical Instruments	*AP 01*
Digital: Process Analytics, Components for Continuous Emission Monitoring	*AP 11*

Low-Voltage Power Distribution and Electrical Installation Technology	
SENTRON · SIVACON · ALPHA Protection, Switching, Measuring and Monitoring Devices, Switchboards and Distribution Systems	LV 10
Standards-Compliant Components for Photovoltaic Plants	LV 11
Electrical Components for the Railway Industry	LV 12
Power Monitoring Made Simple	LV 14
Components for Industrial Control Panels according to UL Standards	LV 16
3WT Air Circuit Breakers up to 4000 A	LV 35
3VT Molded Case Circuit Breakers up to 1600 A	LV 36
Digital: SIVACON System Cubicles, System Lighting and System Air-Conditioning	*LV 50*
Digital: ALPHA Distribution Systems	*LV 51*
ALPHA FIX Terminal Blocks	LV 52
SIVACON S4 Power Distribution Boards	LV 56
SIVACON 8PS Busbar Trunking Systems	LV 70
Digital: DELTA Switches and Socket Outlets	*ET D1*
Vacuum Switching Technology and Components for Medium Voltage	HG 11.01

Motion Control	
SINUMERIK 840 Equipment for Machine Tools	NC 62
SINUMERIK 808 Equipment for Machine Tools	NC 81.1
SINUMERIK 828 Equipment for Machine Tools	NC 82
SIMOTION Equipment for Production Machines	PM 21
Digital: Drive and Control Components for Cranes	*CR 1*

Power Supply	
SITOP Power supply	KT 10.1

Safety Integrated	
Safety Technology for Factory Automation	SI 10

SIMATIC HMI / PC-based Automation	
Human Machine Interface Systems/ PC-based Automation	ST 80/ ST PC

SIMATIC Ident	
Industrial Identification Systems	ID 10

SIMATIC Industrial Automation Systems	
Products for Totally Integrated Automation	ST 70
SIMATIC PCS 7 Process Control System System components	ST PCS 7
SIMATIC PCS 7 Process Control System Technology components	ST PCS 7 T
Add-ons for the SIMATIC PCS 7 Process Control System	ST PCS 7 AO
SIMATIC S7-400 advanced controller	ST 400

SIMATIC NET	
Industrial Communication	IK PI

SIRIUS Industrial Controls	
Digital: SIRIUS Industrial Controls	*IC 10*

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Get more information

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

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