SIMATIC WinCC Professional
The SCADA system inside TIA Portal

siemens.com/wincc-professional
01 Overview

The SCADA system inside TIA Portal
Transparent operation from the TIA Portal – increase your productivity

02 Added value

Efficiency
Integrated Monitoring Client
Efficient web-based reporting
High-performance data archiving
Ready for worldwide use
Efficient analysis of process values (trends)
Efficient analysis of messages
Ready-to-use diagnostics
Efficient management of data records (recipes)
Efficient energy data management

Scalability
Client-Server solutions
Redundant server solutions
Web solutions
Web-based reporting
Process Historian
Software for energy management

Openness
Extensions of the runtime system
Bidirectional flow of information from shop floor to top floor
Cross-vendor communication using OPC (OLE for Process Control)
Standards of SIMATIC WinCC RT Professional
 Automatic creation of visualizations

03 System requirements

Compatibility Tool
Central Archive Server based on the SIMATIC Process Historian
Virtualization

04 Licenses

SIAMATIC WinCC RT Professional V15
Archive licenses
Licenses and updates

05 Conclusion

The system solution for efficient production
01 Overview

The SCADA system inside TIA Portal
Transparent operation from the TIA Portal – increase your productivity
The SCADA system inside TIA Portal

With SIMATIC WinCC Professional Siemens offers a SCADA system which is perfectly integrated in the TIA Portal and with which you are optimally prepared today for the requirements of the increasing digitalization of production processes.

SIMATIC WinCC Runtime Professional is a PC-based operator control and monitoring system for visualization and operator control of processes, production flows, machines and plants in all sectors – from simple single-user systems to distributed multi-user systems and cross-location solutions with web clients.
Overview

Transparent operation from the TIA Portal – increase your productivity

Consistent data throughout the entire production
Ensure optimum plant transparency – with high-performance and reliable archiving of the production data. Even comprehensively in a central process historian.

Transparent production for optimized processes
Make the right decision – anytime and anywhere.

Increased availability of machines and production plants
Reduce production outages – by combining integrated system diagnostics and efficient process diagnostics.

Energy transparency for energy savings according to ISO 50001
Low-cost and energy-efficient production – of course in accordance with the latest legal stipulations.

Open communication connects the automation and IT world
Easily transfer your production data to higher-level systems – via standard interfaces.

Proven in many industries: Learn how WinCC Professional works – and how easily your processes are visualized and become transparent.

Start video
02 Added value
The added value of SIMATIC SCADA systems

As the key to greater productivity, SIMATIC SCADA systems combine efficient engineering with powerful archiving and maximum data security. They form a solid foundation for efficient operational management and intelligent production analyses.

> More about efficiency in engineering
> More about efficiency during runtime

We offer stationary or mobile solutions to meet your growing demands – with guaranteed security. To accomplish this, we draw upon more than 15 years of SCADA expertise in all industries. Whatever your requirements are, no matter how large or small – we have the right answer.

> More information
The added value of SIMATIC SCADA systems

With mobile PCS7 solutions, you can obtain information anywhere and anytime – even using existing tablet or smartphone hardware. The use of multi-touch gestures paves the way to modern operating concepts.

Even special requests can be easily implemented thanks to the support of international standards as well as system-specific script and programming interfaces.

More information

More about the SIMATIC SCADA system
The added value of SIMATIC SCADA systems

WinCC Specialists are at your service as qualified solution providers worldwide. These certified and centrally audited partners realize your individual SCADA project, also with distributed client-server architectures involving redundancy or with applications involving energy data management systems.

More information

Start video
02 Added value

Efficiency

General
- Efficiency
  - General
  - Integrated Monitoring
  - Client
  - Efficient web-based reporting
  - High-performance data archiving
  - Ready for worldwide use
- Efficient energy data management
  - Efficient management of data records (recipes)
  - Efficient energy data management

Scalability

Openness

System requirements

Licenses

Conclusion
Manufacturing processes are becoming more and more complex against a background of ever increasing quality requirements coupled with fast product changes and frequent modifications. To ensure the highest possible productivity at the same time, it has to be possible to make prompt, target-oriented decisions regarding process optimization at all levels of a company. This requires an integrated flow of information across all operating levels and locations.

SIMATIC WinCC RT Professional provides you with high transparency and the basis for process optimization. The intelligent use of information improves the processes in the company for a fast return on investment. This reduces costs, avoids waste, improves the utilization of production facilities, and ultimately guarantees better efficiency and cost effectiveness for the company.
### Integrated monitoring client

The WinCC/WebUX option allows for flexible operator control and monitoring of plant processes via the Internet or an intranet using mobile devices (tablet PCs or smartphones). All devices with HTML5-capable browser are supported.

One monitor client is available at no additional charge with the installation of the basic system as WinCC/WebUX server.

> More information
Efficient web-based reporting

The SIMATIC Information Server offers web-based access to data from production and the SIMATIC Process Historian. It is therefore used at all levels of the automation pyramid.

> More information
High-performance data archiving

Historical process information is saved as WinCC process value archives in the integrated, high-performance SQL database. 500 archive tags are already licensed in the WinCC basic system. This number can be increased at any time through additive powerpacks.

To reduce the amount of data for long-term archiving, the data can be compressed even further. To do so, the maximum value, minimum value or (weighted) mean, the sum or the difference is calculated for adjustable periods of time (e.g. day, month, year) and saved in compression archives.

In addition to automatic archiving, it is possible to add values manually to the archive or to modify archive values later with the appropriate authorization. This is required, for example, for laboratory values in some industries. For reasons of traceability, these values are marked as “modified manually” and the process is documented with an operation message.

In addition to local archiving on a WinCC server, central long-term archiving can be implemented with the "SIMATIC Process Historian" option.

> More information
WinCC allows you to implement display languages in a simple and cost-effective manner. Thanks to UNICODE support, the display language can be changed at any time during operation. This is independent of the language set in the operating system. This means that it is possible to display multiple languages parallel to each other, such as message texts in European and Asian languages.

This make commissioning considerably easier in international teams.
Efficient analysis of process values (trends)

Efficient controls are integrated into WinCC process pictures for the display of current or historical data. Process values can be displayed as a table or analyzed using a trend display. The display is either predefined or can be adjusted individually by the operator, if authorized. Numerous means of representation guarantee the best possible overview.

The freely configurable toolbar functions also provide the option of integrating project-specific functions.

f(x) trends, e.g. pressure/temperature, can also be displayed in addition to the time- and value-based representation.

In combination with the Ruler Controls, there is also the option of performing statistical calculations online without the need for programming. The relevant statistics – maximum and minimum value, average value, (weighted) mean, integral and total – are displayed without delay for a time range selected in the Trend Control.

Efficient monitoring with SIMATIC WinCC
Efficient analysis of messages

The messages are displayed on the screen via the freely configurable WinCC Alarm Control. Here, the display of the message information can be adapted precisely to the requirements of the operator. The settings made can be saved in user-specific or global templates.

WinCC Alarm Control for the display of current/historical messages based on the contents of the individual message blocks can be filtered, selected and sorted, for example chronologically, by priority or by fault location, in the display. The contents can then be exported directly as CSV file or printed out as report. A freely definable toolbar function also offers a maximum degree of flexibility. For examples, project-specific functions can be integrated. To maintain an overview when there is a large numbers of incoming messages, unimportant operating messages can be suppressed from the screen display via an “alarm hiding” function. The hidden messages continue to be archived in the background.

Numerous integrated statistics functions allow a comprehensive analysis of process states. The message hit list shows how long certain messages were pending on average and in total (message duration) and similarly the average and the total acknowledgment time. Of course, the messages can be filtered here by relevant events, message locations and time intervals. This indicates quickly where critical points and bottlenecks in the production are located. To sort the messages in the message display for an evaluation, you can simply select the column heading and the required sorting criterion (for example, “Frequency, descending”).

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The timely recognition of faulty or incorrect modules and devices is essential for avoiding long downtimes. Therefore, constant monitoring of the plant is of the utmost importance. The TIA Portal provides support with its ready-to-use diagnostics mechanisms. No additional comprehensive configurations of the diagnostics are necessary. Activating the devices for the system diagnostics generates alarms derived from the configured plant layout in the "Devices and Networks" editor. These can be displayed in the HMI.

SIMATIC ProDiag is the fully-integrated TIA solution for machine and plant diagnostics. It saves the need for programming diagnostics in the CPU during the engineering phase and provides support for troubleshooting on the HMI. ProDiag makes it possible to monitor a machine or plant and to intervene in the event of a fault.

The monitoring messages which can be generated for the various faults provide specific information on the monitoring mode, location and cause of the fault. Information on troubleshooting can be provided in addition. Plant operators can then not only recognize faults, they can also identify any potential danger in advance and take appropriate countermeasures.
In WinCC Recipes, associated data such as recipes or production data is collected in user archives with a fixed data structure. During runtime, this data is exchanged simultaneously with the automation partners (e.g. a controller).

More information
Efficient energy data management

Ensure the competitiveness of your company with an energy management solution that is already integrated in the automation.

The SIMATIC Energy Suite is available as an integrated option for the TIA Portal. It efficiently combines energy management with automation and thus brings energy transparency into your production. The significantly simplified configuration of energy-measuring components and the automatic generation of the energy management program considerably reduces the configuration effort.

Thanks to the integrated connection to SIMATIC Energy Manager PRO or Service Energy Analytics, the recorded energy data can be seamlessly extended to a multi-site and ISO 50001 certified energy management system.

More information
02

Added value

Scalability
Scalable from the single-user system to a web-based solution – for all industries and technologies

To be able to meet growing requirements, the visualization must be expandable at any time without causing technology incompatibilities or requiring completely new configurations. Scalability with investment protection is the top priority.

SIMATIC WinCC is scalable in terms of quantity structure and functionality. From single-user systems through distributed multi-user systems all the way to web-based solutions. Redundant solutions that achieve maximum availability and security are also possible.

In addition to the scalable plant configuration, WinCC options and add-ons also offer customized extensions for industry-specific and technological solutions.
Client-Server solutions

Depending on requirements, a WinCC single-user system can be expanded into a high-performance client/server system. In this way, several coordinated operator control and monitoring stations can be operated together with networked automation systems.

› More information
Redundant server solutions

The WinCC Redundancy option gives the user the opportunity to increase the system availability by means of redundant WinCC stations or servers that monitor each other and, therefore, ensure the operability of the plant and allow seamless data acquisition.

More information
WinCC/WebUX offers flexible operator control and monitoring of plant processes via the Internet or an intranet, especially using mobile devices (tablet PCs or smartphones). All devices with HTML5-capable browser are supported.

WinCC/WinNavigator allows integrated operator control and monitoring of plants via the Internet or intranet without having to make changes to the WinCC project. Thin client solutions support the use of PCs and even rugged on-site devices and mobile PDAs.
SIMATIC Information Server supports the creation of target group-oriented reports and analyses of historical WinCC and Process Historian data on the basis of Microsoft Reporting Services.

More information
The SIMATIC Process Historian archives any amount of data from different data sources of automation and the MES world and is the central long-term archive for production data.

> More information

The SIMATIC Information Server offers web-based access to data from production and the SIMATIC Process Historian. It is therefore used at all levels of the automation pyramid.

> More information
The following related products for energy management are also WinCC-compatible:

**SIMATIC Energy Suite**
Intelligent energy management generated automatically. SIMATIC Energy Suite in the TIA Portal efficiently links energy management to automation and thus brings energy transparency to production.

**SIMATIC Energy Manager Basic and PRO**
Manage consumption in accordance with ISO 50001, across sites and economically: SIMATIC Energy Manager Basic and PRO support you in the efficiency analysis of your machines and plants and in company-wide energy efficiency controlling, cost center accounting, and the optimization of energy procurement.

More information on SIMATIC Energy Suite [here](#).

More information on SIMATIC Energy Manager Basic and PRO [here](#).
02

Added value

Openness

General
Efficiency
Scalability
Openness

Extensions of the runtime system
Bidirectional flow of information from shop floor to top floor
Cross-vendor communication with OPC (OLE for Process Control)
Standards of SIMATIC WinCC RT Professional
Automatic creation of visualizations
SIMATIC WinCC has always stood for the highest level of openness and integration capability because it is consistently based on standard technologies and standard software tools.

SIMATIC WinCC has been relying on the market leader in operating systems since the first version. This means for you: additional investment security.

By using WinCC Runtime Professional, you automatically benefit from the powerful SQL Server – an integral part of the WinCC basic system.

Furthermore, open interfaces allow you to automate engineering and to connect the automation and the IT world, even during option.
Extensions of the runtime system

With WinCC it is possible to implement connections and dynamic sequences without programming via simple standard dialogs. More complex functions can be implemented as scripts in VBScrip or ANSI-C whenever required – for example in order to convert values, automatically initiate a report, or for individual messages.

For VBScrip, a separate, user-friendly editor with debugging support is available.

When using scripts, you have full access to the properties of all WinCC graphical objects, the controls, and to the object model of WinCC and the applications of other manufacturers.

More information
Bidirectional flow of information from shop floor to top floor

WinCC/IndustrialDataBridge is the flexible information hub between automation and the IT world. It reduces the complexity of interfaces and data formats.

More information
Cross-vendor communication with OPC (OLE for Process Control)

OPC is a communication standard for the secure and reliable data exchange between applications in the industrial automation environment. It describes a series of specifications which are used independent of the manufacturer for the interface between clients and servers or between servers. These include, for example, direct access to real-time data, the monitoring of messages and events, as well as access to historical data.

Originally, the OPC standard was only available for Windows operating systems. It was developed from OLE (Object Linking and Embedding) for Process Control. The new OPC UA specification, which was introduced in 2009, is a real universal connection and is based on a secure, simple and technology-independent platform, which is future-oriented, scalable and expandable for all challenges of the different company levels.
Standards of SIMATIC WinCC RT Professional

- **OPC UA (DE, HA) Server 1.02**
  Transfer of process values, archive data and messages of WinCC according to the OPC UA specification 1.02. In addition to that, a separately licensed OPC UA Server for the connection to the SIMATIC Process Historian is available.

- **OPC DA Server**
  OPC XML DA 1.0 Server
  Data exchange across platforms via the web between WinCC and Office applications, ERP/PPS systems (e.g. SAP/R3), or business-to-business portals.

- **OPC UA DA Client 1.02**
  Access to process data according to the OPC Unified Architecture specification

- **OPC DA Client**
  OPC XML DA 1.01 Client
  Web-based and platform-independent access to process data, e.g. to integrate third-party controllers or systems.

- **OPC HAD 1.20 Server (Historical Data Access)**
  Access to historical data of WinCC, e.g. for data access using proprietary reporting tools.

- **OPC A&E 1.10 Server**
  Forwarding of WinCC process alarms and events.

- **WinCC OLE DB Provider**
  Direct access to the process value and message archives: You can write your own applications to access the databases with WinCC OLE DB. For communication with the WinCC OLE DB Provider, ADO DB / ADO.NET is used in applications created with, for example, Visual Basic, VBScript, VB.NET.
SIMATIC Visualization Architect allows the automatic generation of variables, pictures, screen objects and text lists of a visualization solution, based on the program code of the controller and corresponding rules for creating the visualization objects.

SiVArc is ideal for system integrators and machine builders who want to easily, quickly and flexibly create a standardized operator control and monitoring solution in the TIA Portal.
03 System requirements
Supported operating systems and system requirements

The system requirements vary depending on the type of the selected WinCC installation and the operating system used.

WinCC Runtime Professional (TIA Portal) V16

Operating systems

- Windows 10 64bit Pro
  Version 1809 (OS Build 17763)
  Version 1903 (OS Build 18362)
- Windows 10 64bit Enterprise
  Version 1809 (OS Build 17763)
  Version 1903
- Windows 10 64bit IoT Enterprise LTSB
  2015 LTSP (OS Build 10240) (Test for IPC)
  2016 LTSP (OS Build 14393) (Test for IPC)
  2019 LTSP (OS Build 17763) (Test for IPC)
- Windows Server 2012 R2 64bit StdE
- Windows Server 2016 64Bit Standard
- Windows Server 2019 64Bit Standard

Recommended hardware for single-user systems/clients

- Processor Intel® Core™ i3 3.5 GHz*
- RAM 8 GB

Recommended hardware for multi-user systems server/web server **

- Processor Intel® Core™ i5 2.4 GHz*
- RAM 8 GB

Recommended hardware for web clients

- Processor Intel® DualCore™
- RAM 4 GB

* If additional options are used, higher hardware requirements may apply.
** When using a Workstation operating system, a maximum of 3 clients can be connected to a WinCC server.
Compatibility Tool

The Compatibility Tool is a function provided by Industry Online Support with which you can select compatible software products or check the compatibility of existing configurations.

More information
Central Archive Server based on the SIMATIC Process Historian

The Central Archive Server based on the SIMATIC Process Historian runs in the following operating systems:

- Windows Server 2012 R2 (64bit)
- Windows Server 2016 (64bit)

The recommended hardware configuration depends on the quantity you want to archive using the SIMATIC Process Historian. For details, please refer to the system manual for the administration of the SIMATIC Process Historian.

› To the system manual
Virtualization

The following virtualization systems have been tested:

- VMware vSphere Hypervisor (ESXi) 6.5
- Microsoft HyperV Server 2016
04 Licenses
SIMATIC WinCC Runtime Professional is available as a basic software package with a maximum of PowerTags. PowerTags are data points that are connected to controllers or other data sources via a WinCC Runtime Professional channel.

Up to 32 messages can be obtained from one data point. Moreover, internal tags without coupling are available for additional system performance.

Powerpacks to increase the number of tags are available to provide scalability of the basic package.

The table below shows the available licenses of the basic packages.
SIMATIC WinCC RT Professional V16

<table>
<thead>
<tr>
<th>Basic Package (software as download)</th>
<th>Basic Package (software on DVD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>128 Power Tags</td>
<td>128 Power Tags</td>
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<tr>
<td>6AV2105-0BA06-0AH0</td>
<td>6AV2105-0BA06-0AA0</td>
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<td>512 Power Tags</td>
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<tr>
<td>2.048 Power Tags</td>
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<td>4.096 Power Tags</td>
<td>4.096 Power Tags</td>
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<td>6AV2105-0HA06-0AH0</td>
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<tr>
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<tr>
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<tr>
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<td>6AV2105-0MA06-0AA0</td>
</tr>
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<tr>
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<td>6AV2105-0PA06-0AA0</td>
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</tr>
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<td>WinCC Client for RT Professional V16</td>
</tr>
<tr>
<td>6AV2107-0DB06-0AH0</td>
<td>6AV2107-0DB06-0AA0</td>
</tr>
</tbody>
</table>

Each basic package contains 500 archive tags, regardless of the number of PowerTags (see below) and a WebUX Monitor Client.

For more information and order data on upgrades, powerpacks, and available versions, visit the Industry Mall. A filter mechanism facilitates your selection.

› To the Industry Mall
A WinCC Runtime Professional Basic Package contains 500 archive tags. Additional archive licenses can be purchased for larger configuration limits.
Licenses and updates

Web Monitoring and Operate licenses
One WebUX Monitoring Client is part of the WinCC RT Professional basic package. Further Monitoring Clients and Operate licenses can be obtained separately.

Licenses for a multi-user configuration
The system software with the required number of PowerTags and additionally a “WinCC Server for Runtime Professional” license must be installed on the server. Each client needs a “WinCC Client for Runtime Professional” license.

Updates
Learn about topics such as Software Update Service, types of license, online software delivery, and managing your software licenses using the Automation License Manager.

More information
05 Conclusion
The system solution for efficient production

SIMATIC WinCC RT Professional and SIMATIC Industrial PCs form a high-performance and flexible platform for the acquisition, evaluation and visualization of data. Thus you rely on coordinated development and integrated end-to-end functionality of hardware and software, which pays off over the entire life cycle.

More information
Find out more:
siemens.com/wincc-professional

SIMATIC WinCC Professional – the SCADA system inside TIA Portal:
• Efficiency in engineering
• Scalable to cover increasing demands
• Innovative through mobile SCADA
• Open for simple integration

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More information:
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