SIEMENS

SCADA System

SIMATIC WinCC Open Architecture

siemens.com/wincc-open-architecture
Technical product description
SIMATIC WinCC Open Architecture V3.13

SIMATIC WinCC Open Architecture forms part of the SIMATIC HMI range and is designed for use in applications requiring a high degree of client-specific adaptability, large and/or complex applications and projects that impose specific system requirements and functions. SIMATIC WinCC Open Architecture enables handling with bigger amounts of data with even smaller hardware solutions.

Highlights SIMATIC WinCC Open Architecture:
• Object orientation facilitates efficiency in engineering and flexible system expansions
• Up to 2,048 systems on distributed systems
• Scalable up to networked redundant high-end systems with more than 10 million tags
• Platform-independent and available for Windows, Linux and Solaris
• Hot Standby Redundancy and Disaster Recovery System guarantee highest reliability and availability
• SIL 3 certified according IEC 61508
• Platform for customized solutions
• Comprehensive range of drivers and connectivity: SIMATIC S7, S7-1200, S7-1500, XML, OPC, TCP/IP, Modbus, IEC 60870-5-101/104, DNP3, IEC 61850, IEC 61400, Ethernet/IP, S-Bus ...

Supported operating systems
• Microsoft
  – Windows 8.1
  – Windows 7 SP1
  – Windows Server 2012 R2
  – Windows Server 2008 R2
• Linux
  – RedHat Enterprise Linux 7
  – OpenSUSE 13.1
  – CentOS 7.0
• Oracle Solaris
  – Solaris 11 x86 (on demand)
• VMWare
  – ESXi 5.5
  – ESXi 5.5 Update 1
• iPhone/iPad
  – iOS 6 or higher (for App)

New in SIMATIC WinCC Open Architecture V3.13

Reporting
Web-based reporting has been implemented using a standardized SOAP (Simple Object Access Protocol) reporting interface. This allows reporting tools from third-party suppliers to be used without any additional effort. Modern and smart reporting opens up greater scope for flexibility as well as improved usability for users. Reporting is further simplified by the additional provision of BIRT templates and pre-defined reporting data. Internal restructuring has permitted improved data management, paving the way for faster processing of large volumes of data. Users benefit from higher performance and more rapid historic data retrieval, making for faster reporting.

To allow user-defined data to be exported from WinCC OA to external databases, a DB logger has been implemented, enabling the user to independently define and control the flow of information from SIMATIC WinCC Open Architecture to the various databases (MySQL, RDB, a.s.o.). This permits the classical control center to be separated from the information platform.

Enhancements in the graphical editor
QT5 is now supported, enabling a modern, sophisticated user experience for the operator. The editor now also features a new 3D bar widget, an array of new trend functions and a table widget.
Enhancements in engineering

- The “Wizard framework” provides support in the generation of wizards and applications, and so creates a standardized look & feel, also for project wizards.
- The term “flexible system model” is used to describe the depiction of system data points with different, flexible hierarchies.

Benefits: Greater flexibility, definition of multiple hierarchies, simple engineering due to a dedicated editor, multiple use of system models in projects.

Enhancements for distributed systems

- By caching data point information, only the changed data points need to be transmitted after reconnecting the UI. This results in higher performance due to shorter startup times, a reduced network load and faster synchronization.
- “One Way Dist” is a supplementary function for distributed systems which permits data exchange to be deactivated in one direction. This reduces load on the network and results in faster synchronization in distributed systems.

Enhancements for VIDEO

The VIDEO option permits the native integration of video management functions and has been extended to include a number of important functional features. It is now possible for videos to be digitally recorded on standard hardware components. The video streams can be saved either continuously in a ring memory or event-driven with a defined lead-in and lead-out time. Recordings from several cameras can be played back synchronously. Recorded video streams can be exported together with the relevant time information, while retaining the video stream format supplied by the camera. Existing analog equipment such as analog crossbars and their cameras can be integrated, whereby a pool management system switches the crossbar inputs and outputs. Intuitively operated user interfaces in the Scada system can be used to configure sequences such as virtual tours, which can then be shown at a workstation, on a video wall or on a display monitor.

WinCC OA on the Nanobox PC 227D / 277D

SIMATIC WinCC Open Architecture V3.13 runs with full server functions on the Nanobox PC 227D / 277D. Dedicated license packages are available for the Nanobox PC. This is ideal for use as a data logger in combination with distributed systems.

New driver IEC 61850/61400

Connection of IEC 61850 and IEC 61400 devices including browsing the entire system.

Enhancements for the WinCC OA OPERATOR

The design has been completely revised and fully adapted in line with iOS 7. A dedicated iPad version with an additional alarm line on the home screen provides optimum operating convenience at the tablet. To make for an even better user experience, a number of supplementary functions have been implemented. The detailed value screen also shows the relevant alarm, which can then be acknowledged directly. Another added feature is an integrated user list which allows other users to be contacted directly from within the app. The accustomed multi-language capability of WinCC OA has been adopted, enabling the language to be changed during running operation and set for each individual project.

Enhancements for the Ultralight Client

The Ultralight Client permits plant images to be depicted on different web-based devices without the need for additional engineering. A number of features have been added here, such as an optimized alarm screen, improved trending, automatic logout and automatic screen scaling.
Special features of SIMATIC WinCC Open Architecture

Platforms
• Windows
• Linux
• Oracle Solaris
• IPC 227D / 277D „Nanobox“ Support (32Bit)

Object orientation
• Referencing of symbols and objects
• Inheritance of structured data point types
• Object hierarchy
• Direct mapping of data point types to objects
• Flexible plant model - different views on the data model realizable

Redundancy
• Hot Standby
• Disaster Recovery System (2x2 Redundancy)
The aim of this feature is to extend the WinCC OA redundancy concept through a second Hot Standby System. The operability of the system nevertheless remains maintained on another system even in the event of a complete failure on the first Hot Standby System. Thus, the data loss and the idle time are kept as low as possible.
• Automatic client switch over
• Automatic recovery
• Automatic process image and history synchronization
• Automatic synchronization of project data
• Redundant networks (LAN)
• Redundant peripheral component support (SIMATIC S7)
• Split mode operation for updates and testing

Parallel archiving
The parallel HDB and RDB archiving enables the storage of data into the local historical database and into the central Oracle database. Local systems do not need an Oracle server installation. This archiving method is compatible with the Disaster Recovery System, historical queries and archive compressions.

Security
• Blocking via IP-Blacklist
• System stability via intrinsic safety
• Autonomic systems
• Communication (Standard: SSL encryption, Option: Secure)
• Encryption of panels, scripts and libraries

SSL encrypted communication
From version 3.12 SSL encryption for communication of managers to each other and to all clients is used consistently. It is implemented by default in the system.

Safety
WinCC OA is SIL3 certified according to IEC 61508. TUEV SUED (Technical inspection agency, South Germany) approved that WinCC OA functions, development processes and supporting documents are conform to IEC standard. A guideline is provided, which describes basic and operational conditions within which WinCC OA can be used for safety critical projects as a process visualization and control system.
GIS Viewer
Full integration of standardized maps of cartographic information (GIS) with SCADA objects in WinCC OA.

Video
Offers the easy possibility to integrate IP-cams, IP-components which fulfill the ONVIF 2.0 standard and complete video management systems into WinCC OA. Due to the integration of SCADA and video management into one system, the interfaces can be reduced and the costs for training, maintenance and operation are also reduced to a minimum.

BACnet
BACnet provides an integrated BACnet conform online-/offline-engineering solution and a specific object library.

Recipes
Recipe management for parameter sets and set point lists. Unlimited recipe types, unlimited recipe quantities, access control, creation of recipes from real-time process data. Easy-to-use user interface. Import / export of recipes as CSV.

Scheduler
Timer and event programs with simple graphic configuration. Cyclic and acyclic-periodic call-ups, individual events and time lists, special day rules (holidays). Arbitrary actions: value changes, recipe starts, reminders, scripts

Communication Center
Provides remote alarms and remote information. Alarm output to SMS and e-mail.

AMS (Advanced Maintenance Suite)
Advanced Maintenance Suite (AMS) is an easily configurable software tool for efficient planning, management, realization and control of reactive and preventive maintenance.

Trending
Trend widgets for integration into customized screens and a trend application (Var-Trend) as a ready-to-use trend application.
Supports:
• Online and historical values
• Value trend over time or value
• Time comparison trends
• Bar trends 2D and 3D
• Display of invalid values, alarm range and/or value range
• Multiple or shared scales, ruler, automatic legend
• Time resolution in ms, switch during runtime between local and UTC-time
• Zoom / Unzoom of trend areas

Reporting
• Web-based Reporting Interface (SOAP)
  – ECLIPSE BIRT
  – Crystal Reports
  – SIMATIC Information Server
  – Microsoft Excel
  – Several Reporting templates for ECLIPSE BIRT
• Online values, history
• Compressed data, SQL, alarms
• Diagnostics tools
• Audit trail
Product details
SIMATIC WinCC Open Architecture

Architecture
• Client-server-system
• Functional separation into several processes (managers)
• Load distribution on several computers
• Redundancy (Hot Standby)
• Disaster Recovery System
• Multi-server - distributed systems up to 2048 systems
• Heterogeneous operating systems and version distribution
• Multi-monitor operation
• Multi-login on one workstation
• Multi-user system
• Event orientated process
• Internal message compression
• Safety functions to increase reliability (overload detection and regulation, query restrictions)

Alarm system
• VDI 3699 / DIN 19235
• Freely definable alarm classes with 255 different priorities and definition of alarm colors (blinking)
• Standard, discrete and multi-instance alarms
• Up to 255 analog alarm ranges
• Summary alarms
• Automatic filtering of alarms (Handling of alarm floods)
• Panel hierarchy summary alarms
• Combined alarm- and event screen, alarm row with definable column set and colors and advanced sorting and filtering
• Storable configurations
• Direct access to the associated process window
• Comments and attended values on alarms
• Online change of alarm classes

Process interfaces / drivers
• Event driven or cyclic polling
• Several different drivers at the same time on one server
• Periphery time stamps
• TCP/IP: SIMATIC S7, Modbus, Ethernet/IP, SNMP Manager & Agent, BACnet
• OPC: OPC Client & Server (DA, A&E), OPC UA Client & Server (DA, AC)
• Tele control / RTU: SSI, IEC 60870-5-101, -104, DNP3 and SINAUT, IEC 61850/61400
• Additional drivers on request or with a C++ API

Data model
• Object oriented data model with freely definable and easy configurable structure
• Many standard objects included
• Modeling of technological objects in any hierarchy
• User definable tree structure
• Several different properties definable on elements
• Type-in-type (referencing)
• Inheritance
• Groups
• Generate different views on the data model

Engineering environment
• Graphical editor
• Project hierarchy editor (Panel topology)
• Project editor
• Database editor
• Control programming editor, Script Wizard
• Mass data engineering and ASCII in / out manager
• Integration of external version management tools (CVS, SVN, ...)
• Simple symbols, EWOs, Stylesheets
• Framework for engineering- & application user interfaces
Graphical user interface
- Drag & Drop
- Flexible window technique
- Platform neutral application
- Picture in picture
- Zooming / Panning
- Cluttering / Decluttering
- Root-, child- and embedded panel
- Multi-monitor operation
- Multi-selection
- True color / synchronous blinking
- Up to 8 picture layers
- Online tool tips (multi lingual)
- Configurable panel topology
- GUI navigation objects
- Online switchable multi language support
- UTF-8 for multi language support
- Supports the widely used graphical objects and widgets also with comprehensive animation capabilities
- Support of external widgets (e.g. ActiveX)
- Layout management “Responsive design”
- Multitouch

User access
- Full user access security optional with integration into Windows Active Directory (Single Sign On)
- Various permission levels
- Command protocol (Audit trail)
- Conform to FDA 21 CFR Part 11

Internet/Intranet
- Web-Server, Web alarm screen, diagnostics and reporting
- Web client based on browser plug-in technology
- Ultralight client based on JavaScript / XHTML
- web-based Thin Client (JavaScript / HTML)
- Supports main security functions (HTTPS, Kerberos encryption, etc.)
- mobile App WinCC OA OPERATOR (iOS)

Archiving
Comprehensive archiving options
- Value archives as flat-file structure (HDB)
- ORACLE archiving
- Parallel archiving (Oracle, HDB)
- DB Logger (MSSQL, MySQL, ORACLE)
- Data compression
- Correction values
- Laboratory values
- Web-based Reporting Interface (SOAP)
- Reporting templates based on ECLIPSE BIRT

Object libraries
- WinCC OA standard object library
- SIMATIC S7 object libraries (Basic/Advanced)
- BACnet object library

Application programming / Scripting
- Interpreter with C-syntax (“Control” language) and multithreading support
- Libraries and DLL’s for customized extensions of the scripting language
- Debugger / diagnostics tools
- Supports a lot of external interfaces, like: database access, ADO, COM and XML, XML Parser, XML-RPC-Interface, UART- and TCP-access
- Complete access to attributes of graphical objects
-Know-how protection (Panels/scripts encryption)

UTF-8 for multi language support
All Unicode characters can be represented in four bytes.

Multitouch
Features like zooming, panning, decluttering and safe two-hand operation are supported.
Further information:

www.siemens.com/wincc-open-architecture

Find also additional brochures and technical descriptions about SIMATIC WinCC Open Architecture on our website.

Security information:

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, solutions, machines, equipment and/or networks. They are important components in a holistic industrial security concept. With this in mind, Siemens’ products and solutions undergo continuous development. Siemens recommends strongly that you regularly check for product updates.

For the secure operation of Siemens products and solutions, it is necessary to take suitable preventive action (e.g. cell protection concept) and integrate each component into a holistic, state-of-the-art industrial security concept. Third-party products that may be in use should also be considered. For more information about industrial security, visit http://www.siemens.com/industrialsecurity.

To stay informed about product updates as they occur, sign up for a product-specific newsletter. For more information, visit http://support.automation.siemens.com.