SIMATIC WinCC Unified V16 Session 1. General overview.
WinCC Unified V16 Components

- Core functionality
  basic functionalities, both for HMI and PC
- Basic options
  additional functional enhancement, both for HMI and PC
- SCADA options
  special functional enhancement, only for PC
## WinCC Unified V16

### Core functionality

<table>
<thead>
<tr>
<th>Core functionality</th>
<th>Description</th>
<th>Unified Comfort Panels</th>
<th>Unified PC Runtime</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Interface</td>
<td>Scalable for all devices</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Connectivity</td>
<td>Connecting automation and IT via standard interfaces</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Alarming</td>
<td>Know what’s happening at your facility</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Reporting</td>
<td>Reporting functionality (based on Microsoft Excel)</td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>Scripting</td>
<td>Extensive scripting possibilities for Runtime</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Openness Engineering</td>
<td>Shorten Time to Market using automated engineering</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Openness Runtime</td>
<td>Expand runtime functionality and serve as integration platform</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Technological Hierarchy</td>
<td>Modular and standardized machine and plant concepts</td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>User Administration</td>
<td>Local user management and access control</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

1 Automated reports optional

Available ✓ Available (limited) ✗ In work ✗ Not available
## WinCC Unified V16
### Basic Options

<table>
<thead>
<tr>
<th>Basic Options</th>
<th>Description</th>
<th>Unified Comfort Panels</th>
<th>Unified PC Runtime</th>
</tr>
</thead>
<tbody>
<tr>
<td>File-based Logging</td>
<td>Local data logging for small to medium applications</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Logging Tags included)</td>
<td>(Logging Tags optional)</td>
</tr>
<tr>
<td>Parameter Control</td>
<td>Consistent handling and operation of machine or production parameters</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(included)</td>
<td></td>
</tr>
<tr>
<td>Collaboration</td>
<td>Establish distributed configurations</td>
<td>×</td>
<td>✓</td>
</tr>
<tr>
<td>Clients</td>
<td>Flexible web-based, remote Monitoring and Operation</td>
<td>×</td>
<td>✓</td>
</tr>
<tr>
<td>Audit</td>
<td>Documentation and validation according to legal requirements e.g., 21 CFR Part 11</td>
<td>×</td>
<td>×</td>
</tr>
</tbody>
</table>

✓ Available  ✓ Available (limited)  × In work  × Not available
## WinCC Unified V16

### SCADA Options

<table>
<thead>
<tr>
<th>SCADA Options</th>
<th>Description</th>
<th>Unified Comfort Panels</th>
<th>Unified PC Runtime</th>
</tr>
</thead>
<tbody>
<tr>
<td>Database Option</td>
<td>Performant, large-scale and long-term managed logging</td>
<td>✗</td>
<td>✓</td>
</tr>
<tr>
<td>Redundancy</td>
<td>Increased availability</td>
<td>✗</td>
<td>✗</td>
</tr>
<tr>
<td>Central Logging</td>
<td>Central long-term database logging</td>
<td>✗</td>
<td>✗</td>
</tr>
</tbody>
</table>

- ✓ Available
- ✗ Not available
- ✗ Available (limited)
- ✗ In work

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SIMATIC WinCC Unified V16
WinCC Unified V16 – User Interface
Scalable for all devices

Unified Comfort Panel ✅  PC ✅

Homogeneous design, usability and functionality for Panel and PC systems

- Identical User Interface for Panel- & PC-Systems
- Zero installation client (PC Systems) based on native web technology
- Homogenous engineering of consistent visualizations, independent from technology e.g., Unified Comfort Panel or web-browser
WinCC Unified V16 – User Interface

Scalable Vector Graphics

- Unified Comfort Panel
- PC

Scalable Vector Graphics (SVG) for all resolutions without loss of quality
- Animate (dynamic) SVG files according to the process state
- Ready to use industry library with static and dynamic SVGs
WinCC Unified V16 - User Interface

Touch area

- **Unified Comfort Panel ✓**
- **PC ✓**

**Touch area**

- **Gesture detection object**
  to define actions e.g. for screen change

- **Zooming and panning**
  for more details, e.g. trend control, web control and document viewers

- **Scroll** in lists e.g. Alarm Control
## WinCC Unified V16 – Controls overview

<table>
<thead>
<tr>
<th>Unified Comfort Panels</th>
<th>Unified PC Runtime</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔  Screen Window</td>
<td>✔</td>
</tr>
<tr>
<td>✔  Faceplate Container</td>
<td>✔</td>
</tr>
<tr>
<td>✔  Web Control</td>
<td>✔</td>
</tr>
<tr>
<td>✔  Alarm Control</td>
<td>✔</td>
</tr>
<tr>
<td>✔  Trend Control</td>
<td>✔</td>
</tr>
<tr>
<td>✗  Process Control</td>
<td>✔</td>
</tr>
<tr>
<td>✗  Trend Companion</td>
<td>✔</td>
</tr>
<tr>
<td>✗  Function Trend Control</td>
<td>✔</td>
</tr>
<tr>
<td>✗  Media Player</td>
<td>✔</td>
</tr>
</tbody>
</table>

Available ✔  In work ✗
Screen windows offer many possibilities to create images.

A screen window is used to display another screen in a screen. Possible uses are as follows:

- Pop-Up's
- Slide-In's
- Fixed navigation areas

The screen window content of a screen window can be toggled during runtime. It is also possible to place screen windows in screen windows.
WinCC Unified V16 – Controls
Faceplate Container

Use the same faceplates for panel and PC systems using a faceplate container control.

Standardized operation elements for flexible reuse in all Unified devices and projects.

Efficient operation window (popup) for assets e.g., motor, pump.

Create individual library templates (master copies) with dynamic process connection.
**WinCC Unified V16 – Controls**

**Alarm Control**

**Unified Comfort Panel** ✔ ✔ **PC** ✔

<table>
<thead>
<tr>
<th>ID</th>
<th>Name</th>
<th>Message class</th>
<th>Priority</th>
<th>Source</th>
<th>Event ID</th>
<th>Magnitude</th>
<th>Event ID</th>
<th>Status</th>
<th>Event ID</th>
<th>Time stamp</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Bit_Valve_out</td>
<td>Notification</td>
<td>4</td>
<td>Ventile</td>
<td>HME_RT 1:Alarming</td>
<td>Valve OUT closed</td>
<td>Raised</td>
<td>7/30/19 10:16:42</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Blendeung_1</td>
<td>Notification</td>
<td>4</td>
<td>Ventile</td>
<td>HME_RT 1:Alarming</td>
<td>Bit 1 Stegend</td>
<td>Raised</td>
<td>7/30/19 10:16:48</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Blendeung_2</td>
<td>Notification</td>
<td>4</td>
<td>Tank</td>
<td>HME_RT 1:Alarming</td>
<td>Tank full</td>
<td>Raised</td>
<td>7/30/19 10:16:46</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Analog_alarm_3</td>
<td>Warning</td>
<td>8</td>
<td>Tank</td>
<td>HME_RT 1:Alarming</td>
<td>Fill level above 900</td>
<td>Raised</td>
<td>7/30/19 10:17:20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Analog_alarm_4</td>
<td>Alarm</td>
<td>12</td>
<td>Tank</td>
<td>HME_RT 1:Alarming</td>
<td>Achtung, es ist inger</td>
<td>Raised</td>
<td>7/30/19 10:17:27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Blendeung_3</td>
<td>Alarm</td>
<td>12</td>
<td>Tank</td>
<td>HME_RT 1:Alarming</td>
<td>Tank full</td>
<td>Raised</td>
<td>7/30/19 10:17:37</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Know what’s happening at your facility depending on your personal demand (operator, supervisor, maintenance, …). Multilingual alarm view to support commissioning phase and international operators.

- **Free configurable** alarm view
  - e.g., column order, toolbar buttons
- **Select alarms** according to production unit or user demand e.g., plant unit in technological hierarchy, maintenance
- **Alarm control user interface** for e.g., select time-range, sort, filter, print, hide and lock, acknowledgement

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WinCC Unified V16 – Controls

Trend Companion

Free configurable statistic view in relation to the selected range of the corresponding trend control

User defined evaluation regarding sum, average, max, min, integral

Trend Companion user interface e.g., print (hardcopy) or the export statistical data

Flexible statistical evaluation of process data depending on your personal demand (operator, supervisor, maintenance, ...)

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WinCC Unified V16 – Controls
Function Trend control f(X)

Analysis of data without time-based relationship

Typical use cases are e.g., batch evaluations (pressure vs. temperature) or quality evaluations (availability vs. performance)

Graphical presentation of mathematical formulas e.g., target – performance comparison or reactions at chemical processes

Function trend control refers to online and historical data.
WinCC Unified V16 – Controls

Media Player

Unified Comfort Panel  PC

Direct integration of videos e.g., maintenance instructions or manuals

Integration of existing camera recordings e.g., of security video archive
WinCC Unified V16 – Connectivity

Perfect integration of SIMATIC PLCs (TIA Portal)

High number of connections for PC systems, up to 128 PLCs (>10 with extra Softnet-IE license)

Increased number of connections for Panel systems, up to 16 PLCs

Native 3rd Party communication via Channel Support Package e.g., Modbus TCP, Allen-Bradley EtherNet/IP, ...

1 In preparation  2 only tag communication via OPC UA DA

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WinCC Unified – Reporting
Flexible reporting based on Office tools

Unified Comfort Panel FC PC

Create **fully customized report templates** with a tool you already know – Microsoft Excel

**On Demand Generation** – Trigger a report manually whenever you need it

**Automated generation** – Time-scheduled or event-triggered **reports** – **fully automatic** (optional)

Flexible assignment and planning of report execution at runtime. Consistent documentation of production data for all levels of production (product or quality report)

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WinCC Unified – Reporting – Installation and usage

**Unified Comfort Panel**

- **MS Excel 2016**
  - Create report template

- **WinCC Unified ES**
  - Project for PC systems

  - Import Report Template
  - Select Online data
  - Project download

- **WinCC Unified RT**

  - View Report
  - Local, Email, HTTPS

**WinCC Unified ES**
- Engineer WinCC Unified Screen with Report Control
- Download Project to WinCC Unified PC Station

**MS Excel 2016 (WinCC Unified Report Excel Addin)**
- Create Report Excel Template
- Select data (tags, …) from WinCC unified RT
- View Report using manual trigger function in Excel

**WinCC Unified RT (Report control)**
- Import report template and configure execution (Time, Event, File)
- Time and event triggered Report execution, e.g., per day, shift, …
- Report execution and save Report as XLSX
- Create automatically PDF files via installed Excel or Libre office

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1 Please note the system requirements

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WinCC Unified – Scripting

State-of-the-art and well-known programming language **JavaScript** (local and global scripts)

Local scripts for e.g., screen dynamics, events and scheduled tasks. Support of global script functions

Direct access to WinCC Unified JavaScript object model e.g., access to file-system or databases

Efficient scripting for custom solutions with direct access to Unified runtime objects (tags, logging tags, alarms, screen objects, technological hierarchy)

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WinCC Unified – Technological Hierarchy
Object oriented plant modelling

Simple plant expansion through integration of partial models from other projects.
WinCC Unified V16 – Basic Options
File-based Logging

- **Unified Comfort Panel**: ✔
- **PC**: ✔

**File-based Logging**

- **Central**
- **Databased**

**Unmanaged file-based data archive for small to medium applications** up to 5,000 Logging Tags

**Changeover to databased logging (optional)** possible due to identical logging structures

**Central logging as overall plant archiving solution (optional)**

Universal logging functionality for machine-level requirements regarding handling of archive data e.g., copy/paste log files

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WinCC Unified – Basic Options Collaboration

Avoid duplicate engineering by linking existing screens

Create combined overviews e.g., for line supervision

Flexible setup of distributed configurations

Flexible configuration scenarios by sharing screens.
WinCC Unified V16 – Clients
Flexible web-based, remote Monitoring and Operation

“Zero Installation” Clients, based on native web technology, independent of platform and browser

Flexible, maintenance free 24/7 remote access due to pooled license (concurrent access)
Kiosk mode (Windows 10): SIOS 109771719

Secure remote access using Web standards (https with SSL)

WinCC Unified includes two Clients: One for local visualization plus ONE Client for remote operation, which is included in every WinCC Unified PC Runtime system.

Windows 10 Server for more than 5 Clients!
SIMATIC WinCC Unified – Tools Configuration Manager

Adjust settings for
- Web UI certificate
- Certificates of the OPC UA server
- User Administration
- Storage location of log databases
- Password-protected download

WinCC Unified – Configuration available after installation of WinCC Unified PC Runtime

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Several WinCC Unified projects can be downloaded to one PC station.

Manage WinCC Unified projects
- Run, stop or switch projects
- Show project state
- Activate / Deactivate Debugging
- OPC UA Export
SIMATIC WinCC Unified – Tools
WinCC Unified Certificate Manager

Use the WinCC Unified Certificate Manager to create and transfer certificates.
C:\Program Files\Siemens\Automation\WinCCUnified\WebConfigurator

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WinCC Unified – Tools
Script debugger

Start the Debugger via URL http://localhost:port_number (e.g. http://localhost:9222)
WinCC Unified – Tools
Trace Viewer

- RT & ES trace functionality
- Could be used in scripts via “HMIRuntime.Trace("Trace Message")”

The RTIL Trace Viewer is installed together with WinCC Unified!
Trace Viewer: (C:\Program Files\Siemens\Automation\WINCCUnified\bin\RTILtraceViewer.exe)
SIMATIC WinCC Unified – Tools
Additional tools

Tagsimulator for SIMATIC WinCC Unified

Simulate your configured variables in SIMATIC WinCC Unified quickly and easily with the SIMATIC WinCC Unified Tag Simulator.

Data2Unified- AddIn

The “Data2Unified” add-in offers you the possibility to convert your configuration contents into a WinCC Unified configuration so that you do not have to recreate the contents of your previous configurations from scratch.
SIMATIC HMI Unified Comfort Panels Portfolio

Comfort Panels
12 devices (Key and touch)

Unified Comfort Panels
6 devices (Multitouch)
SIMATIC HMI Unified Comfort Panels
Multitouch from 7" to 22"

MTP 700
800 x 480
7.0"

MTP 1000
1,280 x 800
10.1"

MTP 1200
1,280 x 800
12.1"

MTP 1500
1,366 x 768
15.6"

MTP 1900
1,920 x 1,080
18.5"

MTP 2200
1,920 x 1,080
21.5"

MTP = Multi-Touch Panel
## SIMATIC HMI Unified Comfort Panel

**Increased system performance**

<table>
<thead>
<tr>
<th></th>
<th>Comfort Panel 7 – 12”/15 – 22”</th>
<th>Unified Comfort Panel 7 – 12”/15 – 22”</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLC-Connections</td>
<td>8</td>
<td>16</td>
</tr>
<tr>
<td>Tags</td>
<td>2,048 / 4,096</td>
<td>8,000</td>
</tr>
<tr>
<td>Alarms</td>
<td>4,000 / 6,000</td>
<td>9,000</td>
</tr>
<tr>
<td>Logs</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Logging Tags</td>
<td>2,048</td>
<td>5,000</td>
</tr>
<tr>
<td>Scripts</td>
<td>100 / 200</td>
<td>600</td>
</tr>
<tr>
<td>Text-/Graphic list</td>
<td>500</td>
<td>750</td>
</tr>
<tr>
<td>Screens</td>
<td>500 / 750</td>
<td>1,200</td>
</tr>
<tr>
<td>- Objects per screen</td>
<td>400 / 600</td>
<td>800 / 1,200</td>
</tr>
<tr>
<td>- Tags per screen</td>
<td>400</td>
<td>600 / 800</td>
</tr>
</tbody>
</table>

- **Increased quantity structure from 7” to 22”**
- **Doubled quantity structure compared to Comfort Panel**
- **Differentiation only for tags and objects per screen**

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SIMATIC HMI Unified Comfort Panels
Connectivity

2 Port PROFINET Switch
1 IP address 100 Mbit

1 Port Ethernet
1 IP address 100 Mbit/1 Gbit

Serial
(422, 485) to support 3\textsuperscript{rd} party PLCs\textsuperscript{1}

4x USB 3.0
Support of USB Hardware e.g., printer,

2x SD-Card
Data card for files, logs and customer data
System card for automatic backup

Reset Button
Set device to reset mode

\textsuperscript{1} Available after device release via CSP
SIMATIC HMI Unified Comfort Panel
Temporary not all services on all interfaces!

**Integrated Switch**
2 Ports
- S7/S7+ Communication
- MRP / HSYNC
- PN Basic Services (assign name, IP,..)
- Project Download via PN

**Gigabit Interface**
1 Ports
- Project download and Firmware Update via Ethernet
- Sm@rtServer (VNC) Access
- Web Browser
- Network Access
- Edge Management and Apps
- 3rd Party PLC\(^1\) (e.g. Modbus RTU)

\(^1\) Available after device release via CSP
SIMATIC HMI Unified Comfort Panel
Completely new designed control panel

- New look for the Control Panel - optimized for touch devices
- User has only access to control panel UI – not operating system UI
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