Guide for switching from WinCC Advanced to WinCC Unified

SIMATIC WinCC Runtime Advanced V17
SIMATIC WinCC Unified PC Runtime V17

https://support.industry.siemens.com/cs/ww/en/view/109768002

Siemens Industry Online Support

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1 Introduction

1.1 Overview

SIMATIC WinCC Unified is the all-new visualization system from Siemens for automation applications. The SIMATIC WinCC Unified system consists of the SIMATIC WinCC Unified visualization software and the new SIMATIC HMI Unified Comfort Panels and the Unified PC runtime.

The Unified PC runtime thus extends the product range beyond the previous Advanced PC version. In addition to the new hardware, there are also numerous new features in comparison to Runtime Advanced when it comes to engineering (the document often features Figures from the Comfort systems because the contents are identical).

This document presents and describes important points in order to provide a precise overview of the similarities and differences between the two generations of HMI devices.

Figure 1-1

1.2 Components used

The following hardware and software components were used to create this application example:

Table 1-1

Component	Quantity	Item number	Note
WinCC Engineering V17	1	6AV210.-....7-0	Engineering in TIA Portal.
SIMATIC WinCC Unified PC RT V17	1	6AV2154-….1-7	Runtime for WinCC Unified.
WinCC Runtime Advanced V17	1	6AV2104-….7-0	Runtime Advanced version for WinCC.

1.3 Explanation of symbols used

The following Table shows you the symbols used when comparing the two devices/systems and the associated meaning:

Table 1-2

Symbol	Meaning
●	Function available or supported
-	Function not available, not supported, or not yet supported

2 PC runtime software

2.1 Operating systems

The "SIMATIC WinCC Unified V17 Runtime (TIA Portal)" software can be installed on the 64-bit operating systems listed in the following article: https://support.industry.siemens.com/cs/ww/en/view/109792165.

You can download the runtime software from Siemens Industry Online Support at the following article ID:

https://support.industry.siemens.com/cs/ww/en/view/109793105.

New updates for the runtime software appear at regular intervals. You can find them at the following article ID:

https://support.industry.siemens.com/cs/ww/en/view/109792166

Note

You can find the latest information about the compatibility of the SIMATIC WinCC Unified runtime software with other software and hardware products in the Siemens Industry Online Support Compatibility Tool:

https://siemens.com/kompatool

2.2 License model

The following licenses are required to operate a WinCC Unified runtime project:

- Licenses for PowerTags
- Licenses for web clients
- Licenses for tag archiving
- Licenses for additional installed options packages

2.2.1 Licenses for PowerTags

The runtime licenses of the PC runtime are broken down based on PowerTags. A PowerTag is a datapoint with an external connection, for example to a PLC.

Internal tags are available for free and independently of the runtime license you are using.

Licenses can be ordered on a storage device or as downloads from Siemens Industry Mall.

Available licenses are listed in Table 2-1. A (max.) license allows you to operate a project with up to 600,000 PowerTags and 200,000 internal tags. In the case of structures, each element of the structure is counted as a PowerTag.

Table 2-1

SIMATIC WinCC Runtime Advanced V17	SIMATIC WinCC Unified V17 PC Runtime
128 PowerTags (6AV2104-0BA07-0AA0)	150 PowerTags (6AV2154-3DB01-7AA0)
512 PowerTags (6AV2104-0DA07-0AA0)	500 PowerTags (6AV2154-1EB01-7AA0)
-	1k PowerTags (6AV2154-2EB01-7AA0)

SIMATIC WinCC Runtime Advanced V17	SIMATIC WinCC Unified V17 PC Runtime
2048 PowerTags (6AV2104-0FA07-0AA0)	2.5k PowerTags (6AV2154-2MB01-7AA0)
4096 PowerTags (6AV2104-0HA07-0AA0)	5k PowerTags (6AV2154-1FB01-7AA0)
8192 PowerTags (6AV2104-0KA07-0AA0)	10k PowerTags (6AV2154-2FB01-7AA0)
16384 PowerTags (6AV2104-0LA07-0AA0)	50k PowerTags (6AV2154-1GB01-7AA0)
-	100k PowerTags (6AV2154-2GB01-7AA0)
-	max. PowerTags (6AV2154-0XB01-7AA0)

Following subsequent expansion of a system, upgrade licenses allow you to jump from an existing license to the next-highest number of PowerTags. You can find these upgrade licenses in Table 2-2.

Table 2-2

SIMATIC WinCC Runtime Advanced V17	SIMATIC WinCC Unified V17 PC Runtime
Powerpack 128 PowerTags-> 512 PowerTags V11..V17 (without version change) (6AV2104-2BD00-0BD0)	Powerpack PC 150 -> PC 500 PowerTags (without version change) V16..V17 (6AV2154-1EB20-0AB0)
Powerpack 512 PowerTags-> 2048 PowerTags V11..V17 (without version change) (6AV2104-2DF00-0BD0)	Powerpack PC 500 -> PC 1k PowerTags (without version change) V16..V17 (6AV2154-2EB20-0AB0)
-	Powerpack PC 1k-> PC 2.5k PowerTags (without version change) V16..V17 (6AV2154-2MB20-0AB0)
Powerpack 2048 PowerTags-> 4096 PowerTags V11..V17 (without version change) (6AV2104-2FH00-0BD0)	Powerpack PC 2.5k -> PC 5k PowerTags (without version change) V16..V17 (6AV2154-1FB20-0AB0)
Powerpack 4096 PowerTags-> 8192 PowerTags V11..V17 (without version change (6AV2104-2HK00-0BD0)	Powerpack PC 5k -> PC 10k PowerTags (without version change) V16..V17 (6AV2154-2FB20-0AB0)
Powerpack 8192 PowerTags-> 16384 PowerTags V11..V17 (without version change) (6AV2104-2KL00-0BD0)	Powerpack PC 10k -> PC 50k PowerTags (without version change) V16..V17 (6AV2154-1GB20-0AB0)
-	Powerpack PC 50k -> PC 100k PowerTags (without version change) V16..V17 (6AV2154-2GB20-0AB0)
-	Powerpack PC 100k -> PC max. PowerTags (without version change) V16..V17 (6AV2154-0XB20-0AB0)

All licenses are also available as download versions.

Table 2-3

SIMATIC WinCC Runtime Advanced V17 (download variant)	SIMATIC WinCC Unified V17 PC Runtime (download variant)
128 PowerTags (6AV2104-0BA07-0AH0)	150 PowerTags (6AV2154-3DB01-7LA0)
512 PowerTags (6AV2104-0DA07-0AH0)	500 PowerTags (6AV2154-1EB01-7LA0)
-	1k PowerTags (6AV2154-2EB01-7LA0)
2048 PowerTags (6AV2104-0FA07-0AH0)	2.5k PowerTags (6AV2154-2MB01-7LA0)

SIMATIC WinCC Runtime Advanced V17 (download variant)	SIMATIC WinCC Unified V17 PC Runtime (download variant)
4096 PowerTags (6AV2104-0HA07-0AH0)	5k PowerTags (6AV2154-1FB01-7LA0)
8192 PowerTags (6AV2104-0KA07-0AH0)	10k PowerTags (6AV2154-2FB01-7LA0)
16384 PowerTags (6AV2104-0LA07-0AH0)	50k PowerTags (6AV2154-1GB01-7LA0)
-	100k PowerTags (6AV2154-2GB01-7LA0)
-	max. PowerTags (6AV2154-0XB01-7LA0)

Table 2-4

SIMATIC WinCC Runtime Advanced V17 (upgrade, download variant)	SIMATIC WinCC Unified V17 PC Runtime (upgrade, download variant)
Powerpack 128 PowerTags-> 512 PowerTags V11..V17 (without version change) (6AV2104-2BD00-0BJ0)	Powerpack PC 150 -> PC 500 PowerTags (without version change) V16..V17 (6AV2154-1EB20-0LB0)
Powerpack 512 PowerTags-> 2048 PowerTags V11..V17 (without version change) (6AV2104-2DF00-0BJ0)	Powerpack PC 500 -> PC 1k PowerTags (without version change) V16..V17 (6AV2154-2EB20-0LB0)
-	Powerpack PC 1k-> PC 2.5k PowerTags (without version change) V16..V17 (6AV2154-2MB20-0LB0)
Powerpack 2048 PowerTags-> 4096 PowerTags V11..V17 (without version change) (6AV2104-2FH00-0BJ0)	Powerpack PC 2.5k -> PC 5k PowerTags (without version change) V16..V17 (6AV2154-1FB20-0LB0)
Powerpack 4096 PowerTags-> 8192 PowerTags V11..V17 (without version change) (6AV2104-2HK00-0BJ0)	Powerpack PC 5k -> PC 10k PowerTags (without version change) V16..V17 (6AV2154-2FB20-0LB0)
Powerpack 8192 PowerTags-> 16384 PowerTags V11..V17 (without version change) (6AV2104-2KL00-0BJ0)	Powerpack PC 10k -> PC 50k PowerTags (without version change) V16..V17 (6AV2154-1GB20-0LB0)
-	Powerpack PC 50k -> PC 100k PowerTags (without version change) V16..V17 (6AV2154-2GB20-0LB0)
-	Powerpack PC 100k -> PC max. PowerTags (without version change) V16..V17 (6AV2154-0XB20-0LB0)

The runtime licenses are also available in an ASIA version (versions for the Asia region and only with ASIA dongle).

Note

An ASIA dongle is necessary if the operating system language or the configured runtime language is "China VR, China, Taiwan, Japan or Korean".

Table 2-5

SIMATIC WinCC Runtime Advanced ASIA	SIMATIC WinCC Unified V17 ASIA PC Runtime
-	150 PowerTags (6AV2154-3DB01-7BA0)
-	500 PowerTags (6AV2154-1EB01-7BA0)
-	1k PowerTags (6AV2154-2EB01-7BA0)
-	2.5k PowerTags (6AV2154-2MB01-7BA0)

SIMATIC WinCC Runtime Advanced ASIA	SIMATIC WinCC Unified V17 ASIA PC Runtime
-	5k PowerTags (6AV2154-1FB01-7BA0)
-	10k PowerTags (6AV2154-2FB01-7BA0)
-	50k PowerTags (6AV2154-1GB01-7BA0)
-	100k PowerTags (6AV2154-2GB01-7BA0)
-	max. PowerTags (6AV2154-0XB01-7BA0)

Note Licenses for WinCC Runtime Advanced can be found in Siemens Industry Mall at this address:

https://mall.industry.siemens.com/mall/en/en/Catalog/Products/10360577?tree=CatalogTree

Licenses for WinCC Unified PC Runtime can be found in Siemens Industry Mall at this address:

https://mall.industry.siemens.com/mall/en/en/Catalog/Products/10367280?tree=CatalogTree

Note In case of more than 10 S7 connections, SIMATIC NET must be installed and an additional license is required
(11-65 connections: SIMATIC NET V17 IE S7 license,
MLFB: 6GK1704-1CW17-0AA0;
>65 connections: SIMATIC NET V17 IE S7 Extended license,
MLFB: 6GK1704-1BW17-0AA0).

2.2.2 Licenses for web clients

Each WinCC Unified PC Runtime contains 3 clients:

- Local HMI
- Operate remote access (remote access for monitoring & control)
- Monitor remote access (remote access for monitoring)

Data are exchanged between WinCC Unified server and client (web browser) via an HTTPS connection with SSL/TSL encryption. In order to establish an encrypted connection, the server must first authenticate itself to the client. This assures the client that it is communicating with the right server. In SSL/TLS communication, this is implemented using certificates. Only after successful authentication can a secure encrypted connection between the WinCC Unified server and client be established.

Note With over 5 clients, you will need a server operating system (Windows Server 2016 Standard / Windows Server 2019 Standard).

Operate license

Table 2-6

SIMATIC WinCC Runtime Advanced	WinCC Unified Client license
-	1 Operate Client (6AV2157-1JW00-0AB0)
-	1 Operate Client DL (6AV2157-1JW00-0LB0)
-	3 Operate Clients (6AV2157-3JW00-0AB0)
-	3 Operate Clients DL (6AV2157-3JW00-0LB0)
-	10 Operate Clients (6AV2157-2CW00-0AB0)
-	10 Operate Clients DL (6AV2157-2CW00-0LB0)
-	30 Operate Clients (6AV2157-6CW00-0AB0)
-	30 Operate Clients DL (6AV2157-6CW00-0LB0)
-	100 Operate Clients (6AV2157-2DW00-0AB0)
-	100 Operate Clients DL (6AV2157-2DW00-0LB0)

Monitor license

Table 2-7

SIMATIC WinCC Runtime Advanced	WinCC Unified Client license
-	WinCC Unified Client, 1 Monitor Client
-	WinCC Unified Client, 1 Monitor Client, download
-	WinCC Unified Client, 3 Monitor Clients
-	WinCC Unified Client, 3 Monitor Clients, download
-	WinCC Unified Client, 10 Monitor Clients
-	WinCC Unified Client, 10 Monitor Clients, download

2.2.3 Licenses for tag archiving

File-based tag archiving in WinCC Unified also requires licenses. They are available in levels of 100, 500, 1000 and 5000. Licenses are additive.

For up to 5000 logging tags, use SQLite. Beyond this number, Microsoft SQL Server must be used, scalable up to the maximum number of PowerTags (see 2.2.4).

Table 2-8

WinCC Runtime Advanced license	WinCC Unified license
SIMATIC WinCC Logging for Runtime Advanced (6AV2107-0GA00-0BB0)	100 logging tags (6AV2157-2DA00-0AB0)
	500 logging tags (6AV2157-1EA00-0AB0)
	1000 logging tags (6AV2157-2EA00-0AB0)
	5000 logging tags (6AV2157-1FA00-0AB0)

All licenses are also available as download versions.

In WinCC Runtime Advanced, it is possible to obtain recipes and tag logging as a combination (6AV2107-0HA00-0BB0). This option is not available in Unified: Here, the options are considered individually.

2.2.4 Licenses for additional installed options packages

ProDiag

Table 2-9

WinCC Runtime Advanced license	WinCC Unified license
SIMATIC ProDiag for WinCC Runtime Advanced (6AV2107-0UA00-0BB0)	- (not in V17)

Recipes / Parameter Control

Table 2-10

WinCC Runtime Advanced license	WinCC Unified license
SIMATIC WinCC Recipes for Runtime Advanced (6AV2107-0JA00-0BB0)	WinCC Unified Parameter Control (Unified PC) V17 (6AV2154-0BP01-7AB0)

In WinCC Runtime Advanced, it is possible to obtain recipes and tag logging as a combination (6AV2107-0HA00-0BB0). This option is not available in Unified: Here, the options are considered individually.

Database Storage

Tag logging in WinCC Unified can be optionally extended to include database-powered archiving with the "Database Storage" option. Here, additional licenses are available in increments of 10000 and 30000.

Table 2-11

WinCC Runtime Advanced license	WinCC Unified license
-	10000 logging tags (6AV2157-2FA00-0AB0)
-	30000 logging tags (6AV2157-6FA00-0AB0)

Audit

Table 2-12

WinCC Runtime Advanced license	WinCC Unified license
SIMATIC WinCC Audit for Runtime Advanced (6AV2107-0RA00-0BB0)	WinCC Unified Audit Basis V17 (6AV2157-0BL01-7AB0)

2.2.5 Upgrade licenses

Upgrade from V16 to V17

Existing SIMATIC WinCC Unified PC runtime V16 licenses can be updated to V17 with an upgrade license. The corresponding upgrade license is available under the following item number.

If the "Database Option" was used, a separate upgrade is necessary because V17 is based on a new version of MS SQL.

Table 2-13

Upgrade license	Package (DVD)	Online Software Delivery (OSD)
SIMATIC WinCC Unified PC Runtime RT Upgrade V16 -> V17	6AV2154-0BB31-7AA0	6AV2154-0BB31-7LA0
WinCC Unified Database option upgrade V16 .. V17	6AV2154-0BS31-7AA0	6AV2154-0BS31-7LA0

A license upgrade for the Powerpacks for WinCC runtime Professional or WinCC Runtime Advanced V16 to V17 is not possible.

Upgrade from RT Advanced to Unified RT

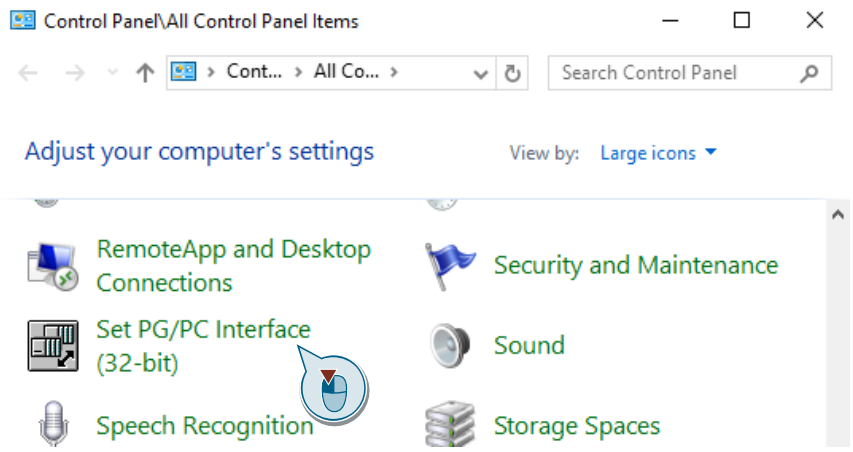
A license upgrade from WinCC RT Advanced V16 to WinCC Unified PC RT V17 is not possible.

2.3 PG/PC interface access point

You can use the PG/PC interface to assign an interface to an access point. An access point establishes a connection between an application, an interface parameter and an interface. Applications can then access the interface via the access point. All of the explanations below apply to Runtime Advanced as well as Unified Runtime.

To configure the PG/PC interface, open "Control Panel > Set PG/PC Interface".

Figure 2-1



To allow WinCC Unified runtime to communicate via the access point "S7ONLINE (STEP 7)", assign this access point to the interface you are using.

Note

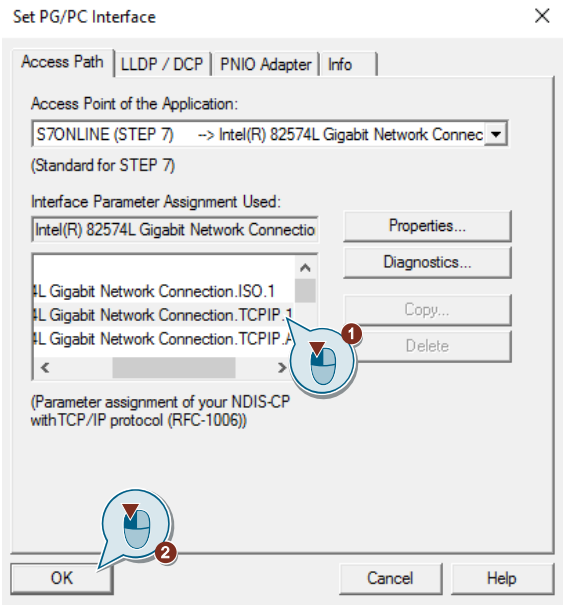
Detailed information on parameter assignment of the PG/PC interface can be found in the STEP 7 Online Help and in Siemens Industry Online Support in the following article:

https://support.industry.siemens.com/cs/de/en/view/11870489

Communication via the physical Ethernet port

For communication with a controller via the PC's Ethernet port, select the name of the interface with the suffix ".TCPIP.1". Example: vmxnet3 Ethernet Adapter.TCPIP.1

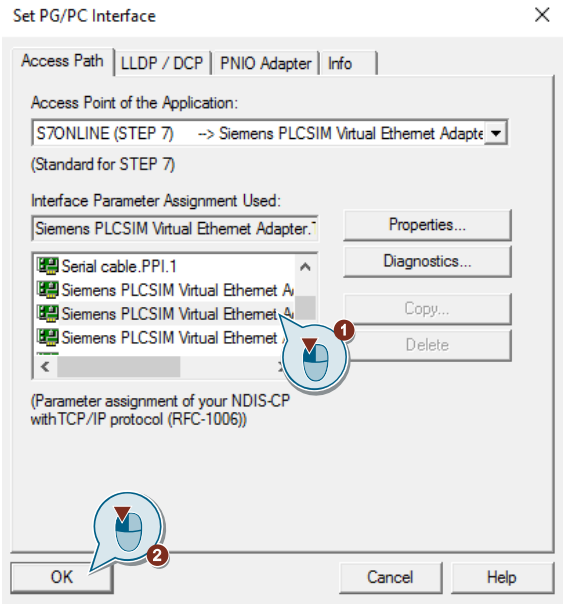
Figure 2-2



Communication with PLCSIM or PLCSIM Advanced

If you installed "S7-PLCSIM" (option 1) or "S7-PLCSIM Advanced" (option 2) and are using either one to simulate the controller, then select the "PLCSIM.TCPIP.1" interface (option 1) or "Siemens PLCSIM Virtual Ethernet Adapter.TCPIP.1" (option 2).

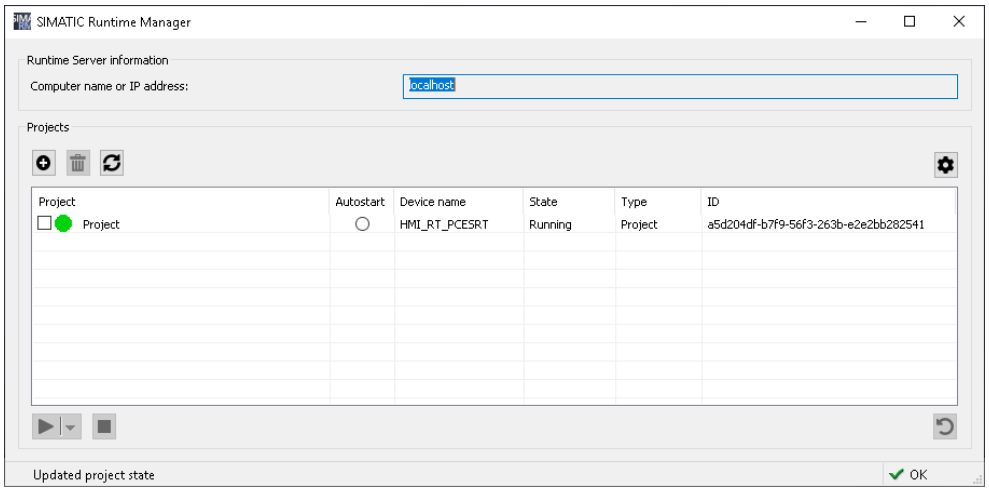
Figure 2-3



2.4 Access to WinCC Unified PC Runtime

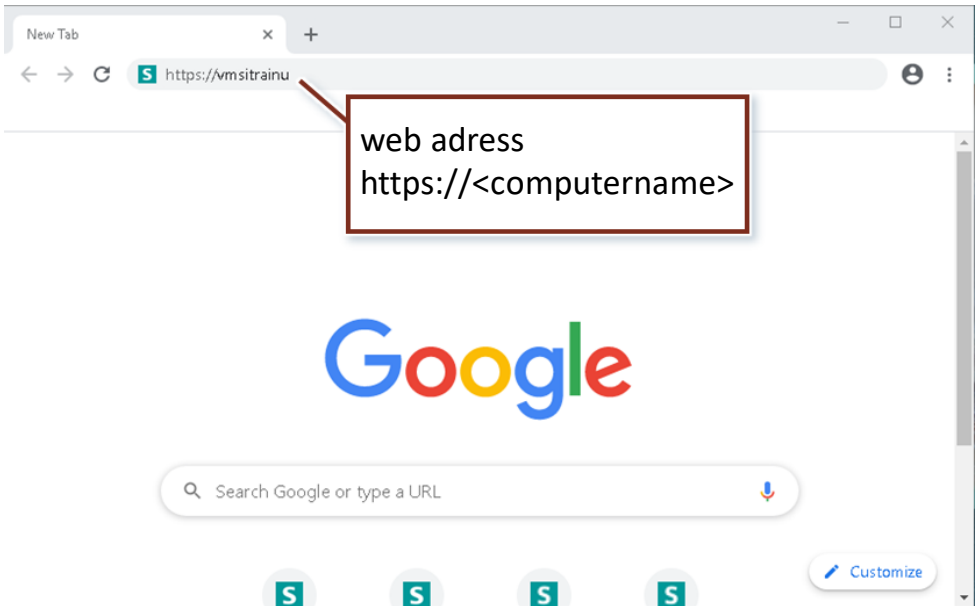
In WinCC Unified, access to the PC runtime is no longer granted automatically in a window after downloading to the device. First a check is run whether the loaded runtime is in fact active. The SIMATIC Runtime Manager is opened for this purpose. The loaded runtime is listed there and accompanied by a current status. If it is "running", you can start the next steps.

Figure 2-4



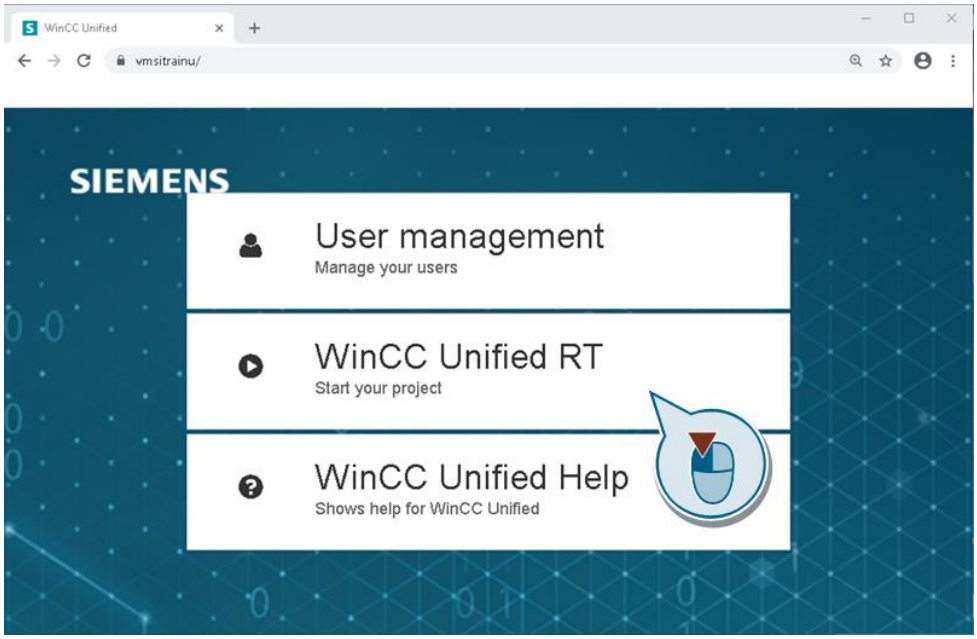
In Unified, you open the runtime via a browser. To do this, open a new window and enter the following HTTPS access address in the address bar: https://<computerName>.

Figure 2-5



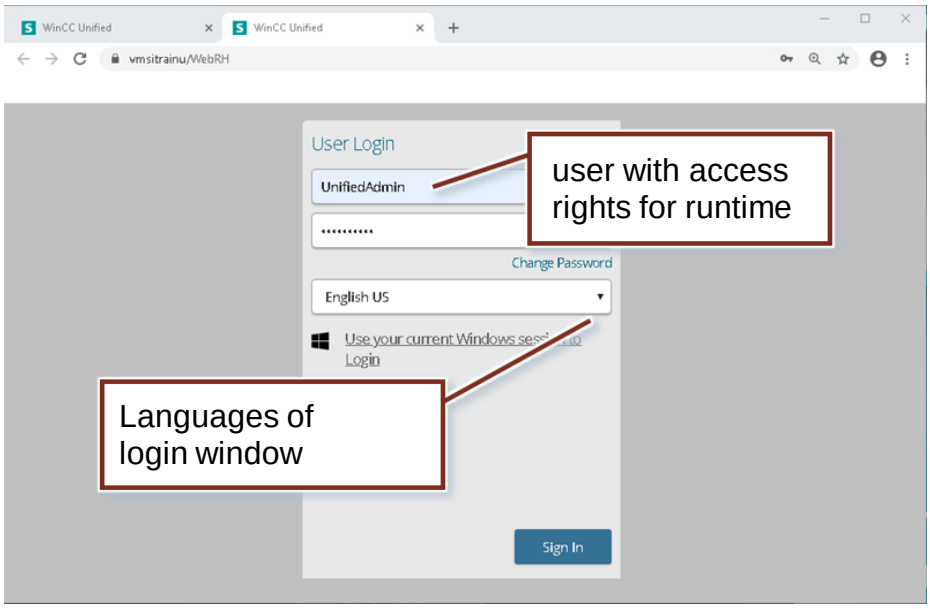
The runtime is opened with the "WinCC Unified Runtime" button.

Figure 2-6



A user with access rights for the runtime is needed in order to access the runtime. If new users with access rights have been created in the configuration, they may also be entered.

Figure 2-7



2.5 Autostart and kiosk mode

Because the WinCC Unified runtime is displayed and operated in a web browser, it is possible to launch or close other programs on the computer system.

There are two mechanisms available if you wish to restrict the user's control to only the WinCC Unified runtime project.

- Autostart
- Kiosk mode

2.5.1 Autostart

WinCC Advanced

To implement automatic start of a project in a Runtime Advanced system, enter the project file and the complete file path in the "Start Center" under "Settings > Configuration path". The compiled project is saved in the PC file system with the extension "*.fwc" and is freely accessible.

To automatically launch the project after booting up the operator device, select the desired delay time in seconds under "Wait for autostart". Then add the "Start Center" application to the Windows Start menu group "Autostart". The project will now start automatically by default.

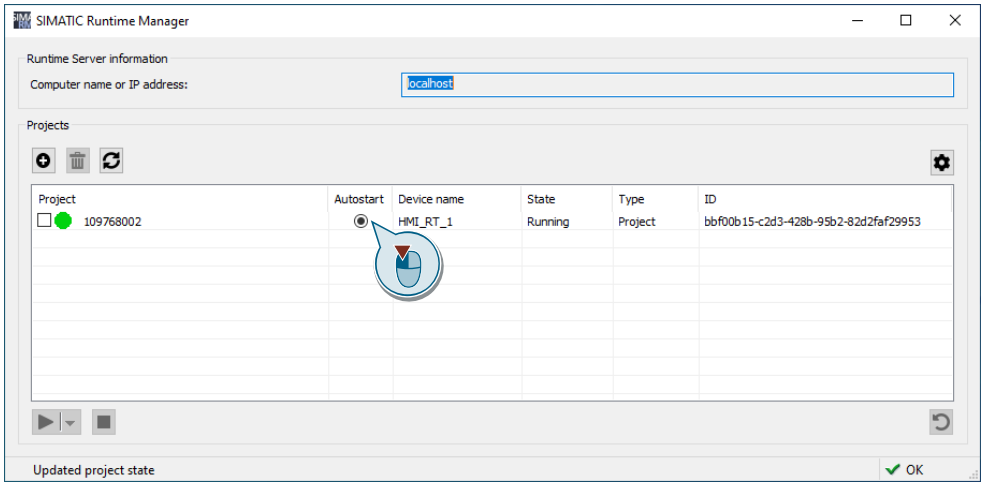
Make sure when defining the runtime settings "Lock task switching" and "Full screen" that you will be able to stop Runtime again. You can, for example, configure a button with the system function "StopRuntime".

WinCC Unified

All of the following options and information apply to Unified Runtime only.

- **Autostart the PC station when power is restored**
  Some PC types can be configured in the BIOS to start up automatically when power is restored. The manual for your device will tell you whether your PC type supports this feature.
- **Automatic login of a Windows users when IPC starts up**
  When a computer starts up, the user is prompted what username he/she would like to use to log in to the system. This interrupts automatic startup, which is undesired after a power outage, for example.
  You have various options for setting up automatic login depending on whether the system is a member of a Windows workgroup or domain.
  The procedure in each case is described in FAQ with Article ID 23598260 in Siemens Industry Online Support.
  https://support.industry.siemens.com/cs/de/en/view/23598260
- **WinCC Unified PC Runtime automatic start**
  Using the SIMATIC Runtime Manager, it is possible to automatically start the WinCC Unified Runtime project, provided that the project is of type "Project". To do this, launch the SIMATIC Runtime Manager and enable the "Autostart" option as shown in Figure 2-8. Projects of type "Simulation" cannot be started automatically.

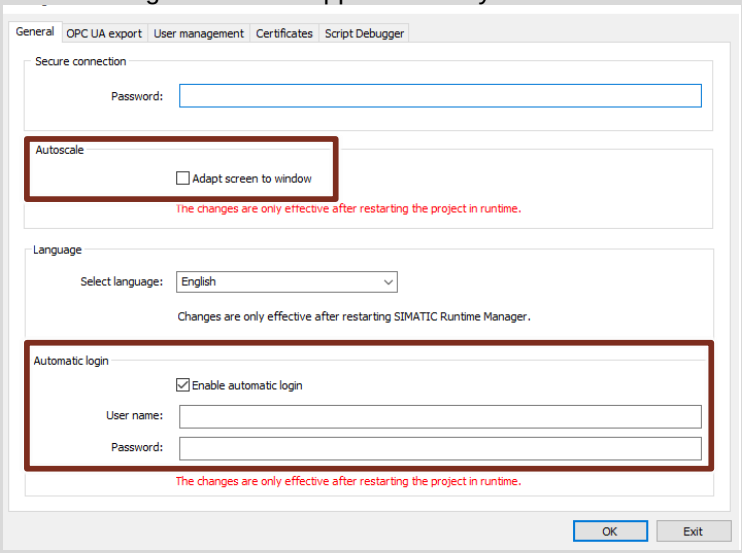
Figure 2-8



The selected project will also be automatically loaded and started when the computer starts.

Note

In addition to autostart, WinCC Unified also gives you options for an automatic login and autoscaling.
Open the SIMATIC Runtime Manager as an administrator and open the Settings. The following window will appear where you can use the features.



Both features went live with WinCC Unified V17 Update 1.

Note

The control screens of the WinCC Unified Runtime project are displayed in a web browser. The web browser is not influenced by this option, however, and must therefore be started separately (see chapter 2.5.2).

2.5.2 Kiosk mode

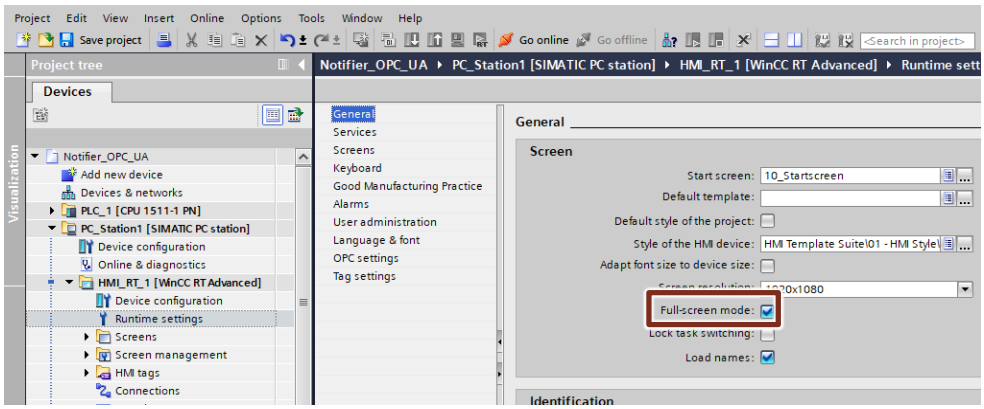
WinCC Advanced

In some workplaces, it is necessary to prevent operators from changing system settings. Runtime Advanced has fullscreen mode for this purpose.

In fullscreen mode, the project takes up the entire screen. There is no longer a window border or window controls.

Click "General" in the "Settings" editor to activate the fullscreen display at startup. Tick the "Fullscreen mode" checkbox in the "Screen" field.

Figure 2-9



Note

More information on fullscreen mode settings in WinCC Runtime Advanced can be found in the system manual at the following link:

https://support.industry.siemens.com/cs/ww/en/view/109798671/119339754251

WinCC Unified

For Unified systems, a simple alternative to fullscreen mode has been created. Kiosk mode is a special mode in the web browser in which the operator controls the web browser in fullscreen mode but cannot exit it. Operating system functions, such as closing the browser or starting other applications, are not accessible in this mode.

Kiosk mode requires a compatible web browser and operating system support. Kiosk mode can be enabled in Windows 10 for the following web browsers:

- Microsoft Edge
- Google Chrome (restricted)

Note

The necessary steps for enabling kiosk mode are explained in the FAQ "How to use WinCC Unified PC in Windows 10 full screen mode/kiosk mode?":

https://support.industry.siemens.com/cs/de/en/view/109771719

2.6 System configurations

2.6.1 Runtime Advanced

The WinCC Sm@rtServer option allows operator devices to be controlled and monitored over the intranet/internet. In this case, Sm@rtServer provides a user interface for the Sm@rtClients. Various devices can act as Sm@rtClients, for example an ordinary PC, a smartphone or another SIMATIC HMI Panel.

The "Sm@rtServiceMonitor" tool checks the Sm@rtClient connections to a WinCC Runtime Advanced PC station. The IP addresses and the number of devices that access the HMI device are stored in internal WinCC tags for further processing.

The SOAP (Simple Object Access Protocol) web service is used for write access to tags. The operator device provides this service with its integrated web server. It can be used to access the tags in the HMI runtime from external applications. A web user with the appropriate permissions is required on the operator device in order to use the SOAP service.

2.6.2 Unified Runtime

After the WinCC Unified Runtime project has been started on the Runtime PC, it can be controlled and monitored via a web browser.

In the process, the Runtime PC provides a web server that multiple web clients can connect to from various devices.

Examples of suitable devices for a web client are:

- Panel PC
- Tablet PC
- Smartphone

The following devices are not available as web clients:

- Comfort Panels
- 2nd gen. Basic Panels

Note

A "WinCC Unified Client" license is required on the Runtime PC for every web client that connects to the WinCC Unified Runtime project (see chapter 2.2.2).

Depending on the plant configuration and the performance of the Runtime PC, licenses are available for 1, 3, 10, 30 or 100 web clients.

Data are exchanged between WinCC Unified server and client (web browser) via an HTTPS connection with SSL/TLS encryption. In order to establish an encrypted connection, the server must first authenticate itself to the client. This assures the client that it is communicating with the right server. In SSL/TLS communication, this is implemented using certificates.

Only after successful authentication can a secure encrypted connection between the WinCC Unified server and client be established.

To be authenticated to the client, the WinCC Unified server needs a valid and certified server certificate.

WinCC Unified Configuration can issue a self-signed certificate that is valid for 12 months. The WinCC Unified Certificate Manager allows you to set up your own certificate authority (CA) and create your own certificates (valid for a maximum of 27 months) and certify them at the CA.

Access from a PC or smartphone

Access to the Runtime PC's web server from a PC or a smartphone is possible with a web browser. Enter the URL of the Runtime PC in the web browser of the web client.

After a successful login, you can control the WinCC Unified Runtime project in the browser.

Access from a Unified Comfort Panel

Access from a Unified Comfort Panel to any web server is possible using a WebControl. The WebControl must be engineered and configured in a control screen of the HMI Panel for this to be possible.

Access from a PC to a WinCC Unified Panel

Access from one or more external web clients to a WinCC Unified Panel is possible.

For this, a certificate for the web server must be imported in the Control Panel of the WinCC Unified Panel.

In addition, the certificate authority issuing the certificate must be imported in the browser of the respective web client. The imported certificate must then be trusted so that the connection to the web server of the WinCC Unified Panels is also considered a trusted connection.

Note

Additional information on the creation of a certificate structure with WinCC Unified can be found in Siemens Industry Online Support in the following article:

https://support.industry.siemens.com/cs/de/en/view/109777591.

Unified Collaboration

In addition to client access, it is also possible to set up distributed plant configurations with WinCC Unified Collaboration. Each WinCC Unified System can then make its own screens available to the others. In this way, WinCC Unified Collaboration enables easy access to screens of other WinCC Unified Systems.

The WinCC Unified Runtime of another station can thus be remotely controlled via the collaboration screens. This allows you to build far-reaching server-client architectures, separate units from one another and save engineering effort.

3 Project engineering

3.1 Configuration software

The new WinCC Unified Runtime can only be configured with SIMATIC WinCC Unified. The minimum requirement to do this is that WinCC Unified V16 Comfort (Engineering) be installed.

You can find WinCC Unified V17 Engineering in the Siemens Industry Mall under the following item numbers.

6AV2151-0XB01-7AA5	WinCC Unified V17 Comfort Engineering (Package)
6AV2151-0XB01-7LA5	WinCC Unified V17 Comfort Engineering (Download)

Note If you have an existing WinCC Comfort, WinCC Advanced or WinCC Professional license, you can use it for WinCC Unified and configure Unified Runtime.

Note If you install WinCC Unified V17 (Comfort or PC) Engineering, you can also configure Runtime Advanced in addition to Unified Runtime.

3.2 Runtime Settings

In the Runtime settings, you will configure options in various areas of your project.

Note You can find more information on the runtime settings groups in the corresponding manual under:

SIMATIC STEP 7 Basic/Professional V17 and SIMATIC WinCC V17: "Runtime settings"
https://support.industry.siemens.com/cs/ww/en/view/109798671/119339567499

SIMATIC HMI WinCC Unified WinCC Engineering V17 – WinCC Unified: "Specifying runtime settings"
https://support.industry.siemens.com/cs/ww/en/view/109794204/131525029515

3.3 Screens and screen objects

In WinCC, you create screens which an operator can use to control and monitor machines and plants. In order to create screens, you have access to predefined objects which you can use to map your system, display process sequences and specify process values.

Feature set with WinCC Comfort/Advanced or Unified

Table 3-1

Description	RT Advanced	Unified RT
Number of screens	500 (device version prior to 13) 750 (device version 13 and up)	2000
Number of objects per screen	400 (device version prior to 13) 600 (device version 13 and up)	1500
Number of child screen windows	-	Unlimited
Number of tags per screen	400	1000
Number of complex objects (controls) per screen	40	100
Custom styles applicable to screen objects	●	-
Automatic scaling of screens is possible when device is changed (larger or smaller resolution)	●	●
Screens can be configured larger than the device resolution	-	●
Screen objects configured outside of the screen area are visible in the runtime	-	●
Display screen objects in the runtime	Complex objects (such as controls) always on top	per configuration in Engineering stage

Note

For more information on screens, please refer to the corresponding manual at:

WinCC Comfort/Advanced V17: "Screen window"
https://support.industry.siemens.com/cs/ww/en/view/109798671/112868397707

WinCC Unified V17: "Configuring screens"
https://support.industry.siemens.com/cs/ww/en/view/109794204/143341464459

Note

1) Note the following regarding autoscaling in WinCC Unified: The system solution "Adjust size to screen" stretches/squeezes all selected screens along with their contents to fit the new size. The system solution does not give the user any more space in the engineering stage.
Another autoscaling option is the scaling of screen windows during the runtime. To do this, use the object property "Adjust size".

3.3.1 Comparison of screen objects

The Tables below provide you with a general comparison of the screen objects between WinCC Comfort/Advanced and WinCC Unified.

Note

Additional information and restrictions on the screen objects can be found in the respective manuals at:

WinCC Comfort/Advanced V17: "Overview of objects"
https://support.industry.siemens.com/cs/ww/en/view/109798671/133025191051

WinCC Unified V17: "Configuring objects"
https://support.industry.siemens.com/cs/ww/en/view/109794204/133338582411

Note

"Changed" screen object property

Each property of a screen object has the "Changed" event. This event occurs if at least one object attribute changes or if a screen is selected again (screen change).

Basic objects

Table 3-2

Description	RT Advanced	Unified RT
"Line"	●	
"Polyline"	●	
"Polygon"	●	
"Ellipse"	●	
"Circle"	●	
"Rectangle"	●	
"Text field"	●	
"Graphic view"	●	
"Ellipse segment"	●	
"Ellipse arc"	●	
"Circle arc"	●	
"Circle segment"	●	

Elements

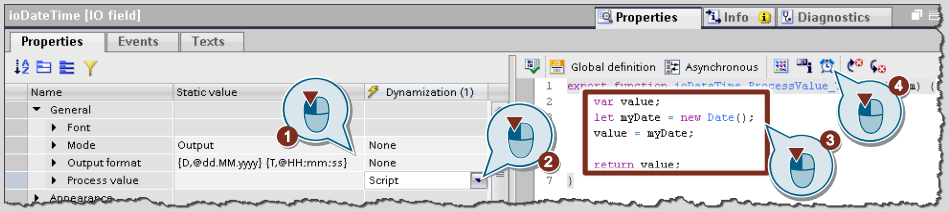
Table 3-3

Description	RT Advanced	Unified RT
"IO field"	●	●
"Button"	●	●
"Symbolic IO field"	●	●
"Graphic IO field"	●	● (Input/output: via symbolic IO field; Output: via graphic view)
"Date/time field"	●	● (can be realized on the application level with I/O field and script)[1)]
"Bar"	●	●
"Symbol library"	●	-

Description	RT Advanced	Unified RT
"Switch"	●	●
"Slider"	●	●
"Gauge"	●	●
"Clock"	●	●
"Radio button"	●	●
"Check box"	-	●
"List box"	●	●
"Touch area"	-	●

Note

[1] Date/time field
In WinCC Unified, you can represent the date/time field by inserting the I/O field and specifying as dynamization the script shown (2 and 3). This script is then executed cyclically every second (4).



For more information on the various display formats for date and time, click here: https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Global_Objects/Date/toLocaleDateString

Note

Swiping gestures are recognized using the "Touch area" screen object. You can trigger any script or system function. You can also distinguish between four directions (to the left, to the right, upward or downward), or any type of swipe gesture.

Controls

Table 3-4

Description	RT Advanced	Unified RT
"Alarm control"	●	●
"Web control"	●	●
"Trend control"	●	● (multiple curves possible per screen)
f(x) trend display ("Function trend control")	●	●
"Media player"	●	● (StartProgram → VLC Player)
"User view"	●	● (via web browser)
"Watch table"	●	-

Description	RT Advanced	Unified RT
"Sm@rtClient view"	●	-
"Recipe view"	●	● (Parameter set display)
"System diagnostics view"	●	●
"PLC code view"	●	●
"GRAPH overview"	●	-
"ProDiag overview"	●	-
"Criteria analysis"	●	-
"Camera view"	●	● (via web control and "https" webstream)
"PDF view"	●	● (StartProgram → PDF Viewer)
"Faceplates-Container"	●	●
"Screen window"	●	●
"Alarm indicator"	●	● (application-based)
"Alarm window"	●	●
"System diagnostics window"	●	-

Faceplates

Table 3-5

Description	RT Advanced	Unified RT
General		
Storage location	Project library → types	Project library → types
Own editor	●	●
Show/hide entire faceplate	● (Make every element in the faceplate visible/invisible)	●
Generate faceplate from screen configuration	●	●
Versioning	●	●
Type/instance concept	●	●
Assign new faceplate type to faceplate instances	-	●
Events available on faceplate instances	● (arranged outwards from faceplate)	●
scalable in the engineering phase	●	●
Cascading faceplates		
Open faceplate from faceplate	-	●
Data structure transfer possible between the faceplates	-	● (Automatic transfer of own structure)
Interface		
Pass tags	●	●

Description	RT Advanced	Unified RT
Pass UDTs	●	● (Only PLC UDTs)
Internal tags configurable	●	● (via non-interconnected interface tags)
Pass colors	●	●
Pass text and graphics lists	●	●
Pass static texts	●	●
Authorization	-	● (via properties interface)
Configurable screen objects		
Basic objects	●	●
Elements	●	●
Controls	-	-
My controls	-	-
Graphics	●	● (versioned graphics type)
Dynamic SVGs	-	-

Note

The Faceplate Editor has been completely redesigned in WinCC Unified. It can be found in the project library. For more information on how to create a faceplate in Unified, link it with the interfaces and place it in the screen, refer to the manual at:

WinCC Unified V17: "Configuring faceplates"
https://support.industry.siemens.com/cs/ww/en/view/109794204/133877667211

For more information on faceplates in WinCC Advanced, please refer to the corresponding manual at:

WinCC Comfort/Advanced V17: "Working with faceplates"
https://support.industry.siemens.com/cs/ww/en/view/109798671/109068355723

Additional screen objects

Table 3-6

Description	RT Advanced	Unified RT
"My controls"	-	●
"Graphics"	●	●
Dynamic SVGs/"Dynamic widgets"	-	●

3.3.2 Animating screen objects

In WinCC you have the ability to animate screen objects. Depending on the screen object, you have different options for creating animations.

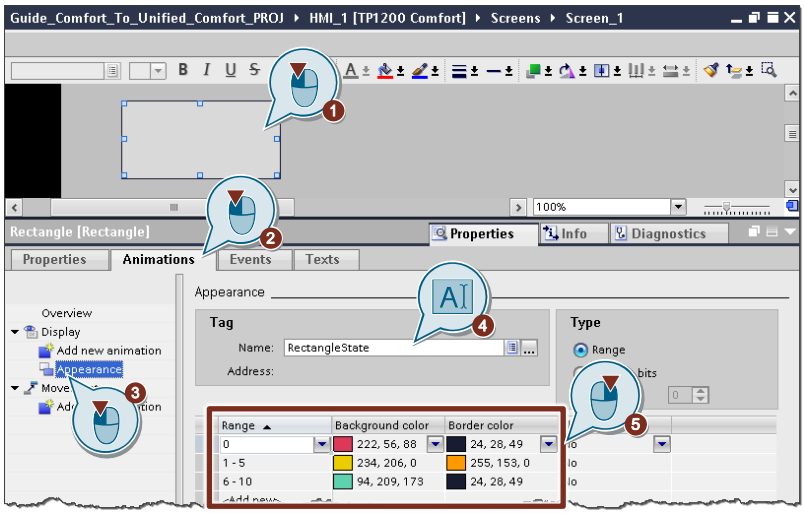
This chapter will demonstrate how to animate screen objects in WinCC Comfort/Advanced and WinCC Unified. In this example, the background color of a rectangle will change depending on a tag value.

WinCC Advanced

Proceed as follows in WinCC Advanced:

1. Select the screen object that you want to animate.
2. Open "Properties > Animation"
3. Insert the animation "Appearance".
4. Select the tag that the appearance will depend on.
5. Configure the "Range", the "Background color" and the "Border color".

Figure 3-1

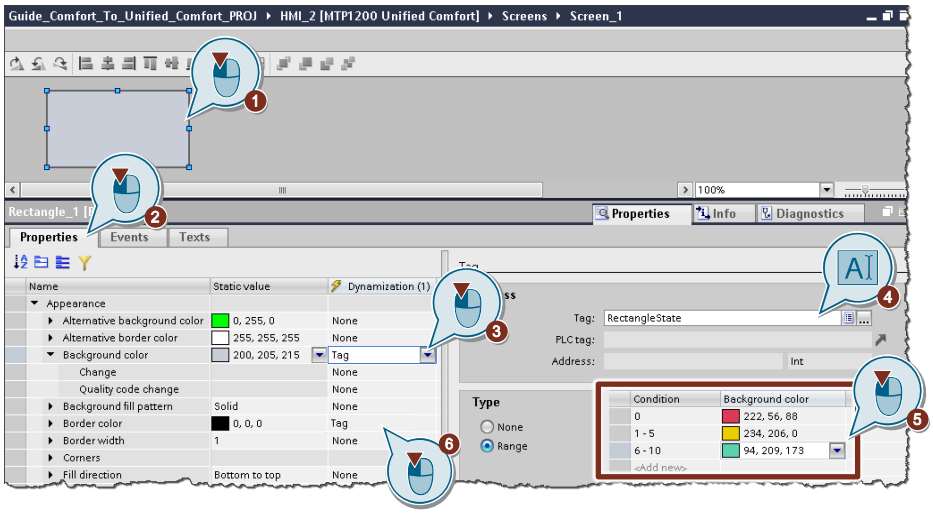


WinCC Unified

In WinCC Unified, you will animate the properties using the "Dynamization" column. The following steps are required to do this:

1. Select the screen object that you want to animate.
2. Open "Properties".
3. For the "Background color" property, select "Tag" as dynamization.
4. In the configuration area, select the tag that the appearance will depend on.
5. Configure the "Condition" and the "Background color".
6. Repeat steps 3-5 for the "Border color" property.

Figure 3-2



Animation comparison

The following comparison shows you which property dynamization you can use to implement the animations from WinCC Comfort/Advanced.

Table 3-7

Animation	RT Advanced	Unified RT
"Tag connections"		
"Process value"	●	● (process value dynamization, dynamization with a bit)
"Display"		
Appearance ("Appearance")	●	● (Dynamization of background and border color)
Operability ("Control enable")	●	● (Dynamization "Allow operator control")
Visibility ("Visibility")	●	● ("Visibility" dynamization → single objects or whole layers/screen windows)
"Movements"		
Direct movement ("Direct movement")	●	● (dynamization "left" and "up")[1)]
Diagonal motion	●	● (dynamization "left" and "up")[1)]

Animation	RT Advanced	Unified RT
("Diagonal movement")		
Horizontal movement ("Horizontal movement")	●	● (Dynamization "left")[1)]
Vertical movement ("Vertical movement ")	●	● (Dynamization "up")[1)]

1) It may still be necessary to customize the dynamizations in WinCC Unified on an application-specific basis.

Note

WinCC Unified offers substantially more options for animations/dynamizations, as nearly every property of a screen object can be dynamized.

For further information, refer to the manual chapter "Configuring dynamization":

https://support.industry.siemens.com/cs/ww/en/view/109794204/143341981451

3.3.3 Configure a screen change

Typically multiple screens are needed for plant visualization. You must configure a screen change in order to switch between the various screens.

System functions for screen changes

Table 3-8

Description	RT Advanced	Unified RT
"ActivateScreen"	●	● "ChangeScreen"
"ActivateScreenByNumber"	●	-
"ActivatePreviousScreen"	●	● (can be implemented on application level, see Note *)

Note

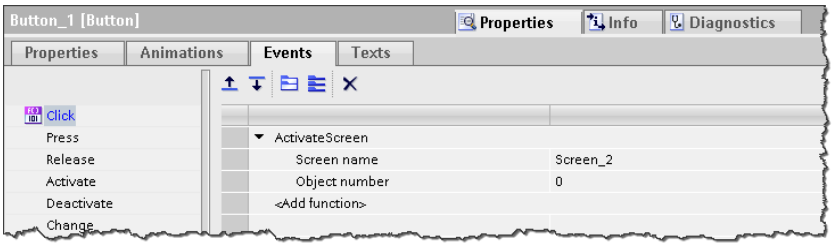
You can find a finished application for switching to previous screens from the screen buffer in the SIMATIC WinCC Unified - Toolbox at the following link:

https://support.industry.siemens.com/cs/de/en/view/109770480

WinCC Comfort/Advanced

In WinCC Comfort/Advanced, you will configure the screen change with "ActivateScreen", regardless of whether you do so in a process screen, a slide-in screen or in the Permanent area of the operator device.

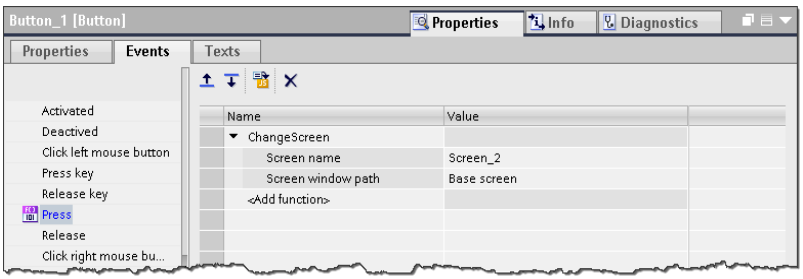
Figure 3-3



WinCC Unified

In WinCC Unified, a screen change is effected with the help of the system function "ChangeScreen".

Figure 3-4

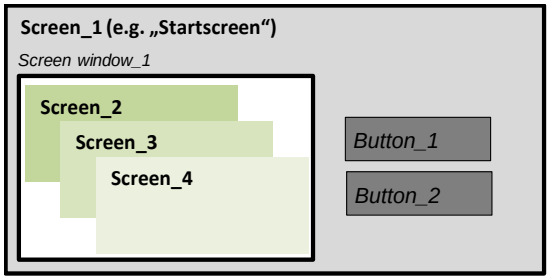


Due to the screen window technology in WinCC Unified, the system function parameters differ depending on which screen hierarchy you implemented.

Example 1: Configuration with one screen window

In this example, the Start screen contains a window, "Screen window_1". The screen "Screen_2" needs to appear in the screen window by means of button "Button_1".

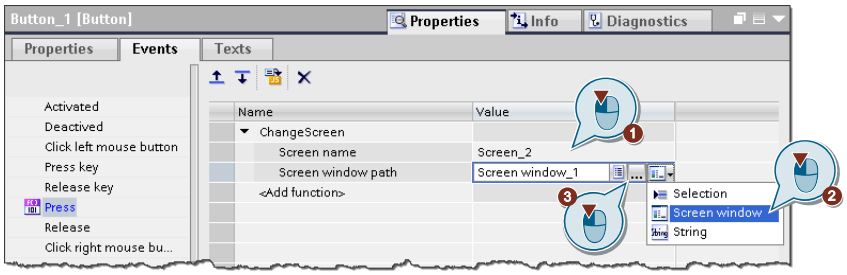
Figure 3-5



You can change the input type to "Screen window" at the "Screen window path" ["Pfad Bildfenster"] parameter of the system function "ChangeScreen" (2).

Then you can select the screen window "Screen window_1" using the context menu.

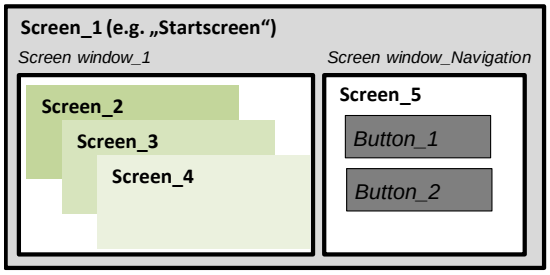
Figure 3-6



Example 2: Configuration with 2 navigation screen windows

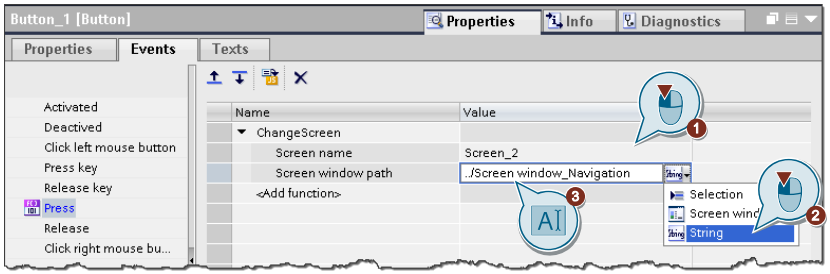
In the second example, the Start screen contains two windows, "Screen window_1" and "Screen window_Navigation". The "Screen window_Navigation" window displays the screen "Screen_Navigation", which contains the button "Button_1". When this button is pressed, the screen "Screen_2" should appear in the screen window "Screen window_1".

Figure 3-7



In this case, you must change the input type to "String" at the parameter "Screen window path" (2). Then you can manually enter the object path.

Figure 3-8



Note

To understand how the object path is composed, please refer to the "System manual – SIMATIC WinCC WinCC Engineering V17 – Runtime Unified" in the chapter entitled "'FindItem' method" under the heading "Formulation of the object path".

https://support.industry.siemens.com/cs/ww/en/view/109794204/135249836811

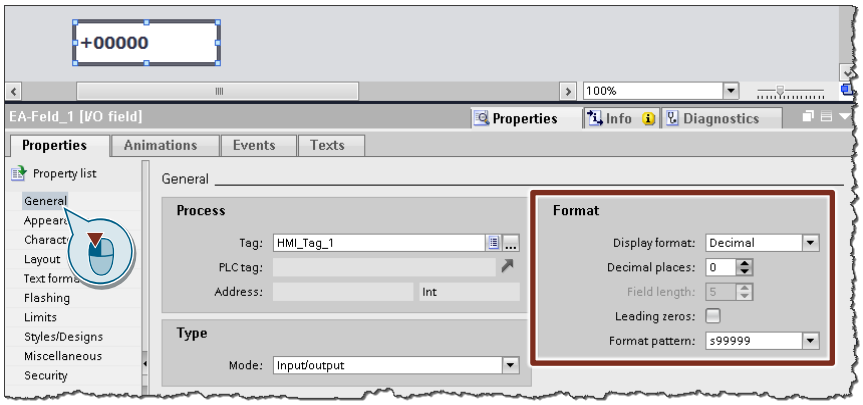
3.3.4 Configuring output format and units

You can usually visualize tag values with input/output fields (I/O fields). For better readability, you can change the format as well as the unit of measure.

Configuring output format and units of measure in WinCC Comfort/Advanced

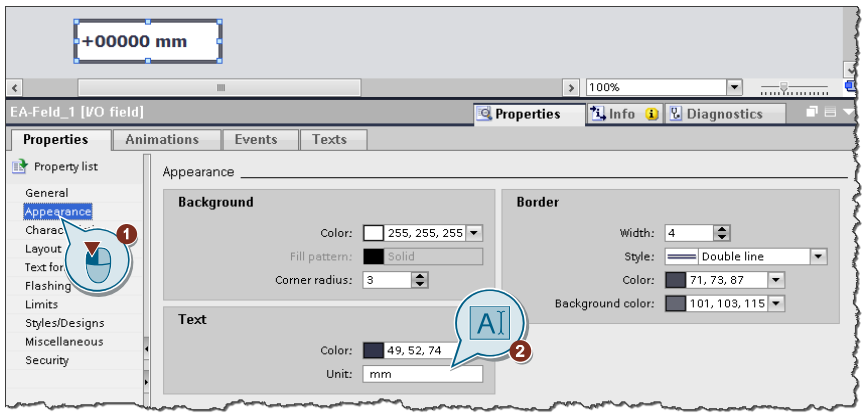
In order to adjust the format of the I/O field in WinCC Comfort/Advanced, you have access to multiple parameters under "Properties > General" in the "Format" section.

Figure 3-9



In order to add a unit to the process value, click in the area navigation on "Appearance" and then enter the appropriate unit, such as "mm", in the "Unit" field.

Figure 3-10



Note

Both the output format and the unit will be applied directly to the I/O field.

Configuring output format and units of measure in WinCC Unified

In WinCC Unified, both the format and the unit are configured with the property "Output format".

1. To achieve this, open the "Properties" of the I/O field and select the appropriate format from the dropdown list.

Note

Units are selectable with the dropdown menu as of STEP 7 V16 Update 1 and WinCC V16 Update 1.

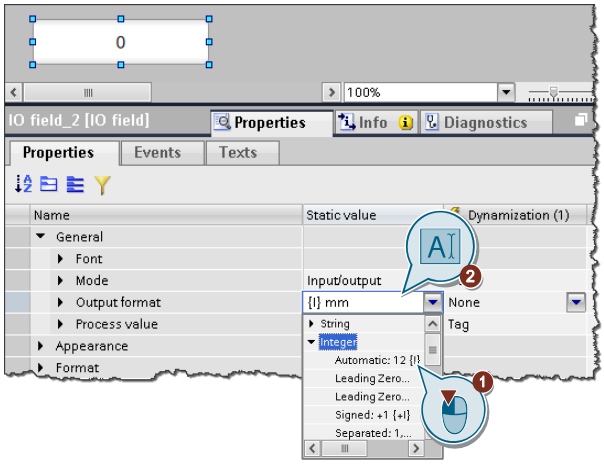
You can find the update in Siemens Industry Online Support at the this link:

https://support.industry.siemens.com/cs/ww/en/view/109775861

For STEP 7 V17 and WinCC V17, the update is not required!

2. You will then modify the unit behind the format.

Figure 3-11



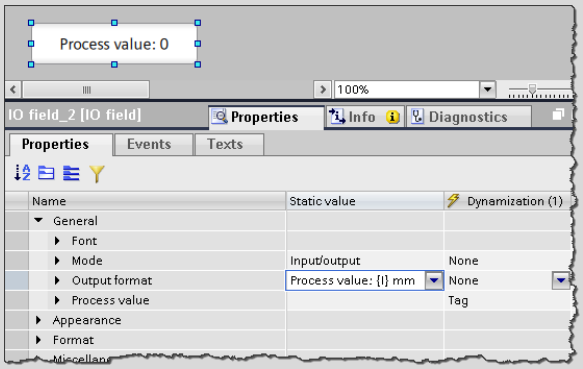
Note

The unit of the I/O field will not be shown in the Engineering stage, rather it will only appear in the runtime (TIA Portal V16 Update 2 and later).

The units are language-independent (the same unit appears in all languages). If you want to change the units depending on the language, you will need an additional text field or a text list that you fill with the different language variants.

Note

Besides the format and unit, you can also enter other text in this field. This enables you to combine text and a process value in one object.

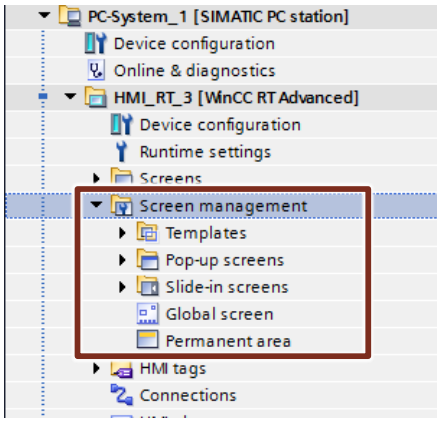


3.4 Configuring Screen management

The "Screen management" folder in WinCC Comfort/Advanced contains the following elements:

- "Templates"
- "Pop-up screens"
- "Slide-in screens"
- "Global screen"
- "Permanent area"

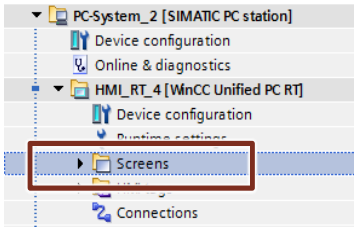
Figure 3-12



Screen management elements in WinCC Unified

In WinCC Unified, these elements are all configured in the "Screens" folder and displayed as appropriate through screen windows or system functions.

Figure 3-13



Chapters 3.4.1 - 3.4.5 below will examine all elements of the Screen management in greater detail and provide detailed descriptions of their implementation in WinCC Unified.

3.4.1 Configuring Templates

In a template, you configure objects that are displayed in all screens that are based on this template.

Brief overview

The Table below shows you the essential differences between WinCC Comfort/Advanced and WinCC Unified. Detailed descriptions will follow under each of the headers in this chapter.

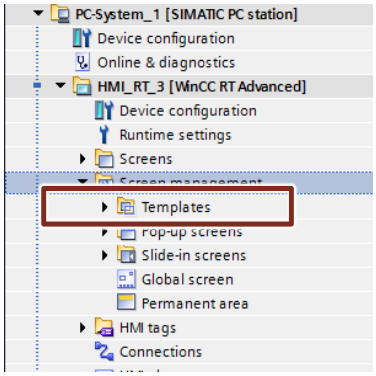
Table 3-9

Description	RT Advanced	Unified RT
Editor for configuration	"Templates"	"Screens"
Screen layout determined by	Template assigned to screen (via the screen properties)	Screen laid out with windows or with dynamic show/hide for windows
Template is modular	No	Yes
Template dynamically modifiable for each screen	No or, a new template is required each time	Yes Screen windows with template elements can be shown/hidden

Templates in WinCC Comfort/Advanced

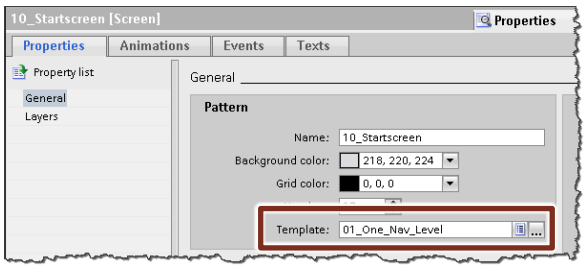
In WinCC Comfort/Advanced, you created and configured "Templates" in folders of the same name.

Figure 3-14



You were then able to assign a template to each process screen.

Figure 3-15

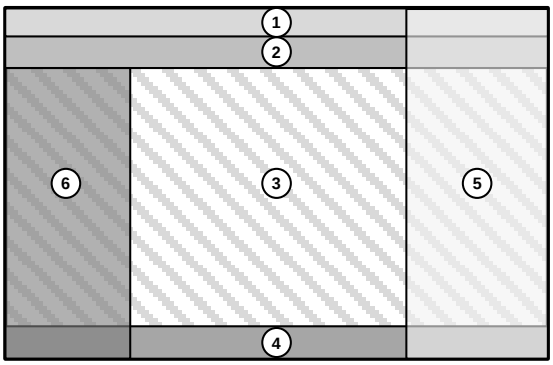


Templates in WinCC Unified

In WinCC Unified, you will create templates by structuring a screen (such as the Start screen) with multiple windows and thus define your screen layout. Within the windows, you can show screens and change them.

One possible screen layout with screen windows could, for instance, consist of six different windows.

Figure 3-16, Start screen structure with 6 screen windows

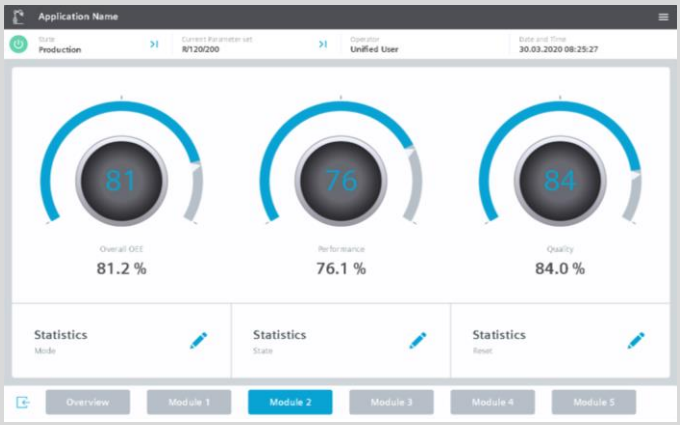


1. Title bar
2. Status bar
3. MainWindow (application area)
4. MainNavigation (first navigation level as slide-in)
5. SubNavigation (second navigation level)
6. Third-level navigation (third navigation level)

Note

Further information on the screen layout shown can be found in the application example "HMI Design with the HMI Template Suite" in the WinCC Unified documentation:

https://support.industry.siemens.com/cs/ww/en/view/91174767



Depending on how complex your plant visualization is, the number of windows will vary. You can show/hide these dynamically with the runtime.

Note

Additional information on screen windows and how to configure them can be found in the system manual "WinCC Engineering V17 – Runtime Unified" in the "Screen window" chapter:
https://support.industry.siemens.com/cs/ww/en/view/109794204/133723340043

and in the chapter entitled "Basics of Screens":
https://support.industry.siemens.com/cs/ww/en/view/109794204/132821413899

3.4.2 Configuring "Pop-up screens"

Using a pop-up screen, you can configure content that can be displayed in addition to a process screen. The pop-up screen will always be shown in the foreground (over the process screen).

Brief overview

The following Table shows you the essential differences between the two engineering systems. Detailed descriptions will follow under each of the headers in this chapter.

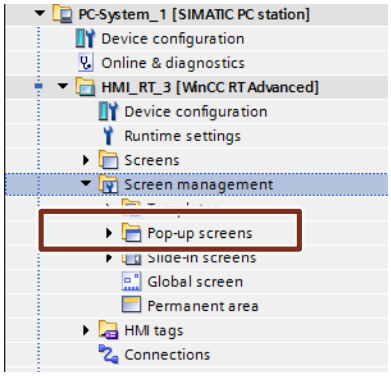
Table 3-10

Description	RT Advanced	Unified RT
Editor for configuration	"Pop-up screens" ("Pop-up Screens")	"Screens"
Launching the pop-up	System function "ShowPopupScreen" - Display mode: On	System function "OpenScreenInPopup"
Closing the pop-up	System function "ShowPopupScreen" - Display mode: Off	System function "ClosePopup" or System function "OpenScreenInPopup" and parameter "Close if opened: True"
Screen objects addressable in the pop-up screen, e.g. with a script	No	Yes
Pop-up can be moved	No	Yes

Pop-ups in WinCC Comfort/Advanced

In WinCC Comfort/Advanced, you created and configured "Pop-up screens" in the folder of the same name in the project tree.

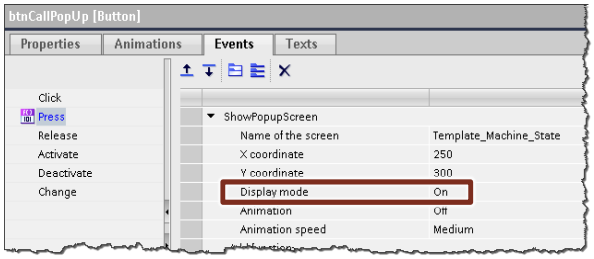
Figure 3-17



Show/hide pop-up

The pop-up screen that you created can be shown/hidden with the system function "ShowPopupScreen" and the parameter "Display mode".

Figure 3-18

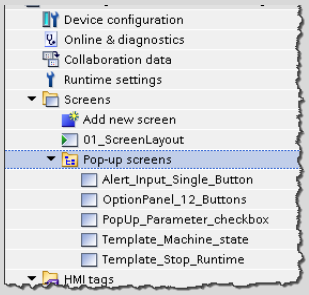


Pop-ups in WinCC Unified

In WinCC Unified, pop-up images are created in the same manner as normal process screens and called up on the screen as "PopupScreenWindow".

Note

In order to better separate the pop-up screens from the process screens in the future, it is recommended to store them in a separate folder inside of "Screens".



As an option, you can also name the pop-up screens with the prefix "Popup_", for example.

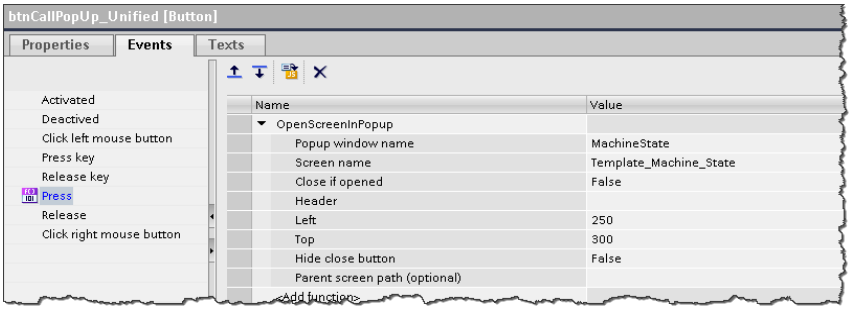
In actual terms, follow these steps:

1. Add a new screen in the "Screens" folder in your Unified HMI device.
2. Adjust the "height" and "width" properties of the screen.
3. Configure all elements required for the pop-up screen.

Showing a pop-up

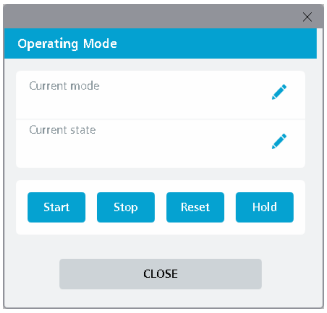
You can show the screen you created using the system function "OpenScreenInPopup".

Figure 3-19



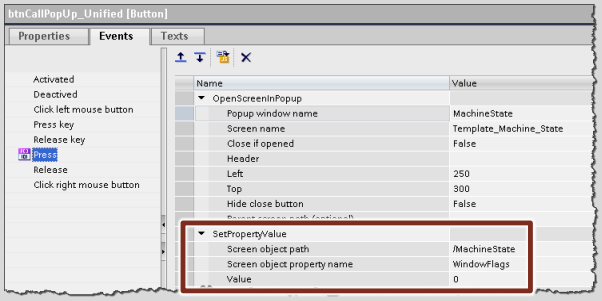
The screen appears as "PopupScreenWindow" in the runtime after the trigger (here: button is "pressed") is activated. By default, each "PopupScreenWindow" has a gray border and a header.

Figure 3-20, pop-up in the runtime



Note

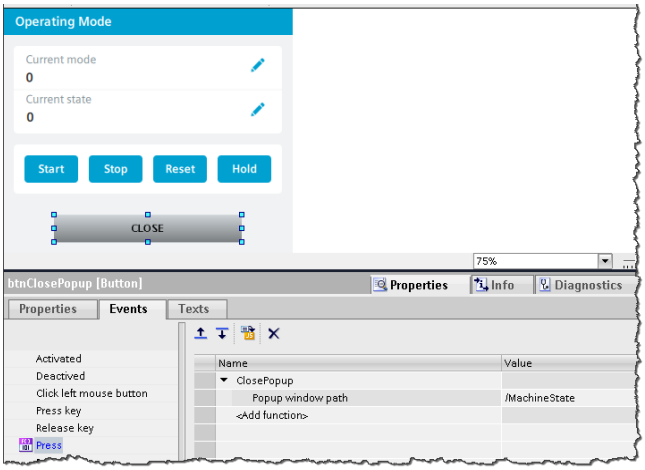
If you want to show the "PopupScreenWindow" without a border or header, set the "Window settings" properties with the system function "SetPropertyValue".



Closing a pop-up

You have three options for closing the pop-up after it has opened:

1. Using the "Close" button in the header of the "PopupScreenWindow"
2. Pressing the button to launch the pop-up a second time, provided you have set the parameter "Close if opened:" to "True" in the system function "OpenScreenInPopup".
3. With the system function "ClosePopup".



Note

The parameter for "Popup window path" is composed of the "/" (referenced to the level of the user's window) and the name of the pop-up window that you specify when opening the pop-up with "OpenScreenInPopup".

Note

For more information, refer to the system manual "SIMATIC HMI WinCC Unified WinCC Engineering V17 - WinCC Unified" at:

"OpenScreenInPopup" system functions:
https://support.industry.siemens.com/cs/ww/en/view/109794204/130553805451

"ClosePopup" system functions:
https://support.industry.siemens.com/cs/ww/en/view/109794204/135401836171

"SetPropertyValue" system functions:
https://support.industry.siemens.com/cs/ww/en/view/109794204/122556599563

"PopupScreenWindow" object:
https://support.industry.siemens.com/cs/ww/en/view/109794204/135040215179

3.4.3 Configuring slide-in screens

The "Slide-in screen" object facilitates rapid navigation between the Start screen and other screens where other content is placed.

Brief overview

The following table shows you the essential differences between the two systems. Detailed descriptions will follow under each of the headers in this chapter.

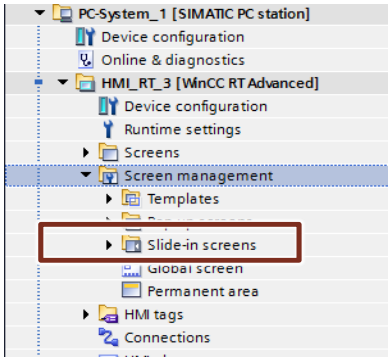
Table 3-11

Description	RT Advanced	Unified RT
Editor for configuration	"Slide-in screens" ("Slide-in Screens")	"Screens"
Launching the slide-in	Slide-in handle or system function "ShowSlideInScreen" - Mode: On	Make screen window visible ("Visibility" property)
Closing the slide-in	Automatically, or system function "ShowSlideInScreen" - Mode: Off	Hide screen window ("Visibility" property)
Animation possible	Yes	No
Number	4 (one slide-in per screen edge)	Any

Slide-in screens in WinCC Comfort/Advanced

In WinCC Comfort/Advanced, slide-in screens were activated and configured in the folder "Slide-in screens".

Figure 3-21

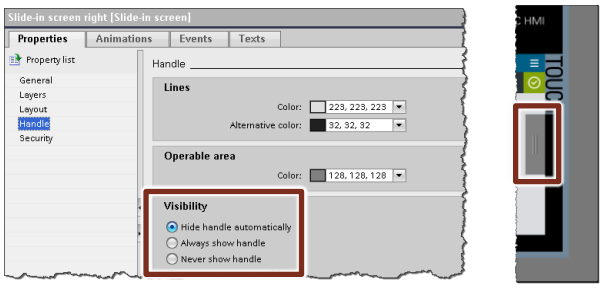


Show/hide slide-in screen

You have two ways to show/hide the configured slide-in screen in your process visualization:

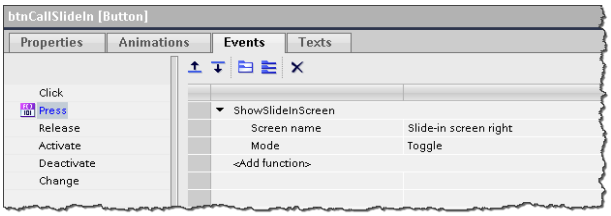
1. Show/hide slide-in screen using handle

   Figure 3-22, Handle in engineering and runtime



2. Show/hide slide-in screen using system function "ShowSlideInScreen"

   Figure 3-23

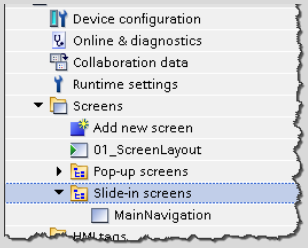


Slide-in screens in WinCC Unified

In WinCC Unified, slide-in screens are created in the same way as normal process screens and made to appear via a separate screen window.

Note

In order to better separate the slide-in screens from the process screens in the future, it is recommended to store them in a separate folder inside of "Screens".



As an option, you can also name the slide-in screens with the prefix "Slide-in_", for example.

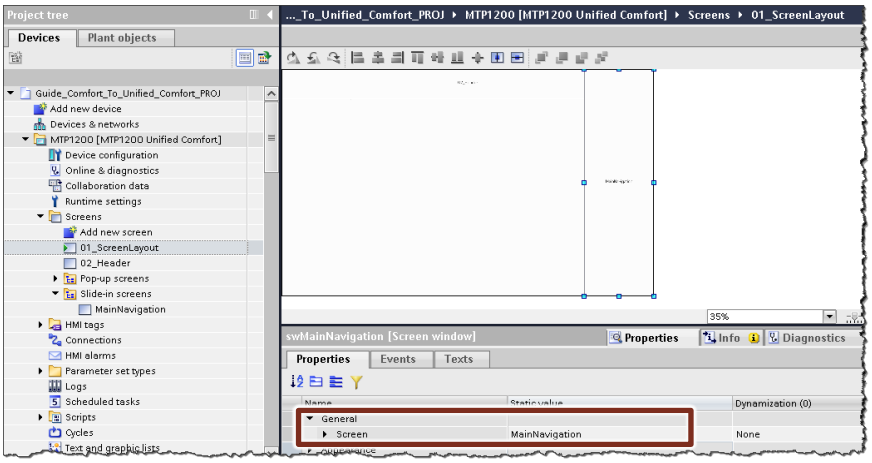
Note

Animating the screen window, such as flying in from the right, is not possible using the standard functions of WinCC Unified.
As an option, the position of the window can be changed with a script and a timer.

In actual terms, follow these steps:

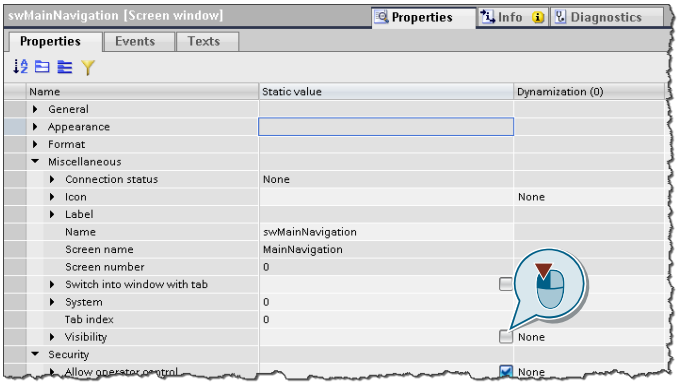
1. In your Unified operator device in the "Screens" folder, add a new screen and rename it (e.g. to "MainNavigation").
2. Adjust the "height" and "width" properties of the screen.
3. Configure all the necessary elements that need to appear in the slide-in screen.
4. Add a window to your process screen and enter the name of the slide-in screen (e.g. "MainNavigation") in "Properties > General > Screen".

   Figure 3-24



5. Uncheck the checkbox for the window property "Visibility".

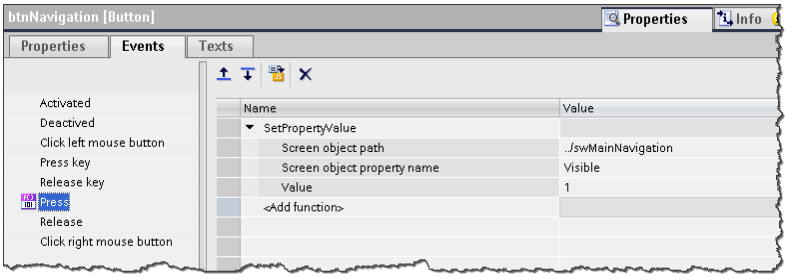
   Figure 3-25



Show screen window

You have three ways of making the screen window (with slide-in screen) appear:

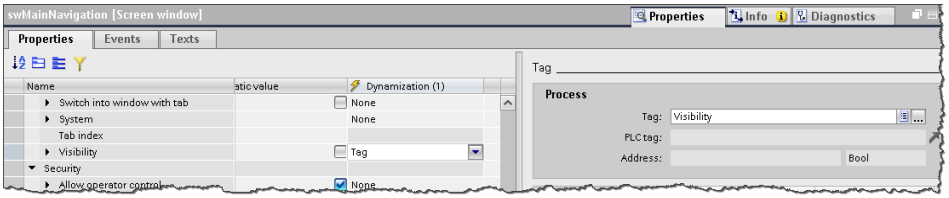
1. Show screen window with system function (recommended)



2. Screen window with script (recommended)

```
Screen.FindItem('../swMainNavigation').Visible = true;
```

3. Show screen window using tag



Hide screen window

In order to hide the screen window again, the "Visible" property is set back to "false" as soon as, for example, a button in the slide-in screen is pressed.

Note

If you wish to show/hide the "screen window" using the system function as well as the script, the object path will be needed (here, in the example it is "../swMainNavigation").

A detailed description of the object path can be found in chapter 3.3.3.

3.4.4 Configuring Global screens

For all screens of an operator device you will define global elements, independently of the template being used.

Brief overview

The following table shows you the essential differences between the two systems. Detailed descriptions will follow under each of the headers in this chapter.

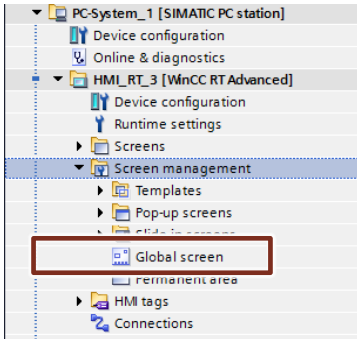
Table 3-12

Description	RT Advanced	Unified RT
Editor for configuration	"Global screen"	"Screens"
Configurable elements	"System diagnostics window" "Alarm window" "Alarm indicator"	All screen objects are available
Display sequence	Elements of the global screen are displayed before/in front of all other elements	Elements can be configured in the foreground using screen levels
Visibility	Configurable using control properties	Configurable using element property "Visibility"

Global screen in WinCC Comfort/Advanced

You can configure the global screen in the Editor of the same name in the "Screen management" folder.

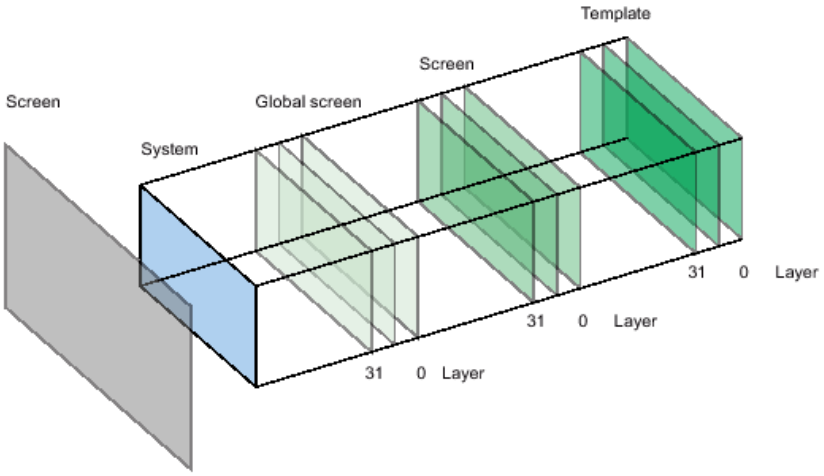
Figure 3-26



Screen structure

Here, the content of the global screen is always in front of the content of the process screen and the configured templates.

Figure 3-27



Configurable screen objects

You can configure only the following three controls in the global screen:

- "System diagnostics window"
- "Alarm window"
- "Alarm indicator"

Visibility

You can use the properties of the control to determine when that control is displayed.

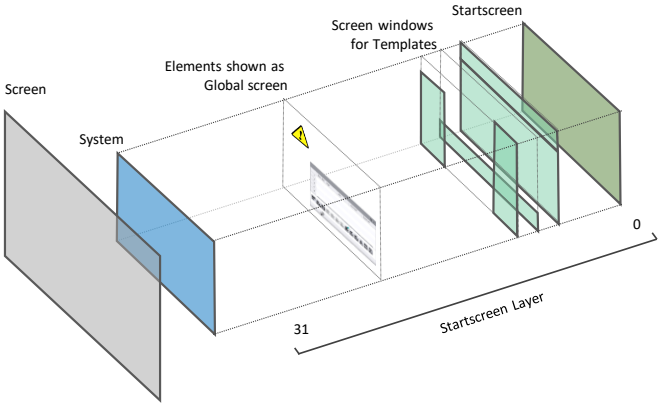
Global screen in WinCC Unified

In WinCC Unified, you will use screen levels in your Start screen to configure content that is independent of the templates being used.

Screen structure

In a screen structure with multiple windows, as described above in chapter 3.4.1, you can configure the screen objects in higher screen levels to be displayed in front of all other screen content.

Figure 3-28



Configurable screen objects

The Editor for configuring the "Global screen" content is the same one used to create process visualizations. In this manner, all screen objects are available to you.

Visibility

You can use the screen object property "Visibility" to determine when the screen objects will be shown/hidden. You accomplish this by setting/resetting the property once a condition is met (e.g. tag value =1).

3.4.5 Configuring the "Permanent area"

In the Permanent area you will configure objects that need to be visible in all screens.

Brief overview

The following Table shows you the essential differences between the two engineering systems. Detailed descriptions will follow under each of the headers in this chapter.

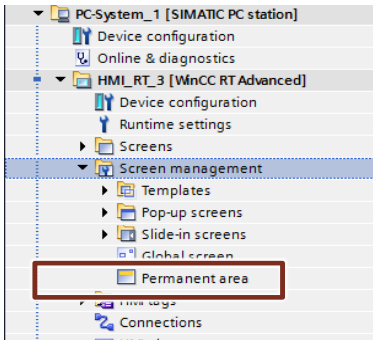
Table 3-13

Description	RT Advanced	Unified RT
Editor for configuration	"Permanent area"	"Screens"
Appearance on screen	Separate area in the screen	Screen window in the screen
Permanent area configurable/movable	Only configurable with respect to height	Freely configurable/movable
Screen objects can be shifted in the event of a change	Automatically	Automatically (adjust screen in screen window) or manually

Permanent area in WinCC Comfort/Advanced

In WinCC Comfort/Advanced, the Permanent area is configured in the Editor of the same name in the "Screen management" folder.

Figure 3-29



Once you set the height of the Permanent area to be greater than 0 pixels, all screens and templates on your operator device will be reduced by the height of the Permanent area.

Configurability

Both the position (as measured from the upper screen edge) and the width (limited by the total resolution) of the Permanent area are not configurable.

If the size of the Permanent area changes, already configured screen objects are shifted by the height of the change.

Permanent area in WinCC Unified

If you likewise need a Permanent area in WinCC Unified, you can implement it with a "Screen window".

You can take this into account in the screen layout (see Figure 3-16). In this way, for example, a "Title and status bar" can be seen as a Permanent area.

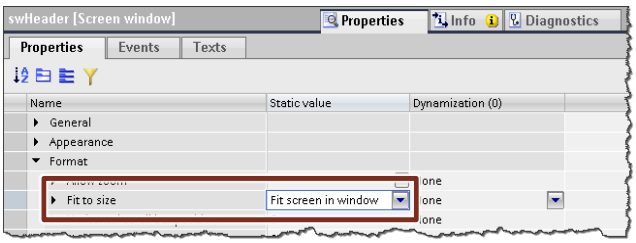
Configurability

You can freely configure the height, width and position of the screen window within the screen.

There are two ways to change the size of the screen for the Permanent area:

1. Screen automatically adjusts to the screen window using the property of the screen window

   Figure 3-30



2. Manually adjust the other screen contents to match the new size

3.5 HMI tags

Using tags, process values from your programmable controller are operated on and visualized in your HMI device.

Note

Tags already configured in WinCC Comfort/Advanced can be partially converted to WinCC Unified using the "Data2Unified Add-in" (see chapter 5.1).

Feature set with WinCC Comfort/Advanced or Unified

The following Table shows you the feature set of both systems in a direct comparison:

Table 3-14

Description	RT Advanced	Unified RT
Number of tags (internal and external) in the project	6144 (device version prior to 13) 12288 (device version 13) 24576 (device version 14 or later)	600,000 (depending on license)
Number of elements per array	1600	2000
Number of local tags	2048 (device version prior to 13) 4096 (device version 13) 8192 (device version 14 or later)	20000
Number of structures	999	1000
Number of structure elements	400	1600
Number of tags per screen	400	1000
Appearance when connection in I/O field is broken	########	0

Description	RT Advanced	Unified RT
Multiplexing		
Address multiplexing	●	●
Index multiplexing	●	●
Tag multiplexing	●	●
Indirect addressing (direct at the place of use)	-	●
Acquisition mode of external tags		
"On demand"	●	●
"Cyclic in operation"	●	●
"Cyclic continuous"	●	-

3.5.1 Data types

Depending on whether you use internal tags (no process connection) or external tags (with process connection), you have access to different data types.

Internal tags

Table 3-15

Description	RT Advanced	Unified RT
Binary numbers		
Bool	●	●
Byte	-	●
Word	-	●
DWord	-	●
LWord	-	●
Times		
DateTime	●	●
LTime	-	●
Integers		
Int	●	●
DInt	●	●
LInt	-	●
SInt	●	●
UInt	●	●
UDInt	●	●
ULint	-	●
USInt	●	●
Floating-point number		
Real	●	●
LReal	●	●
Character		
WChar	-	-
WString	●	●

Description	RT Advanced	Unified RT
Data structure		
Array	●	●
UDT	-	●

External tags

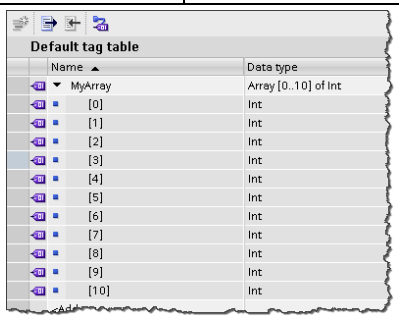
The data types for tags can vary depending on communication driver. For a detailed overview of which data types are supported by which communication driver, refer to the manual at:

- WinCC Comfort/Advanced V17: "Data types"
  https://support.industry.siemens.com/cs/ww/en/view/109798671/76838977163
- WinCC Unified V17: "Data types"
  https://support.industry.siemens.com/cs/ww/en/view/109794204/133401417611

3.5.2 Tag counting

The number of tags you will use in your project will change due to the difference in how tags are counted with a Comfort Panel vs. a Unified Comfort Panel.

Table 3-16

Description	RT Advanced	Unified RT
General description	An array is counted as a tag, regardless of the number of array elements	Each array element and the array tag itself are counted as tags.
Example array		
Number of tags in the example array	1	12

3.5.3 Configuring events to tags

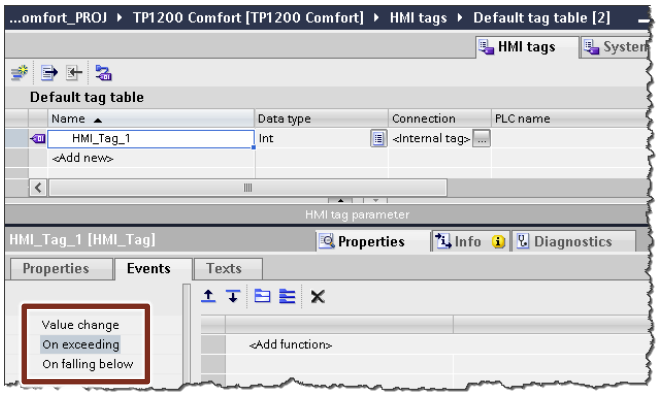
You can use the values of tags as the triggering event for an action in the runtime. To achieve this, you can configure "Events" that will be executed when the condition is met.

WinCC Comfort/Advanced

In WinCC Comfort/Advanced, each configured tag has the following three "Events":

- "Value change"
- "On exceeding"
- "On falling below"

Figure 3-31



WinCC Unified

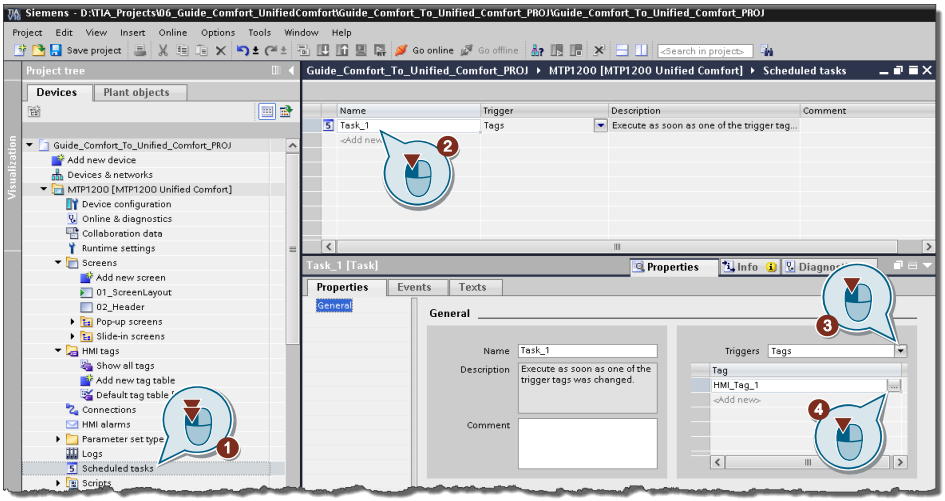
In WinCC Unified, you will configure "Events" for tags in the "Scheduled tasks".

To do this, proceed as follows:

1. Adding task with trigger

- Open "Scheduled tasks" in the "Project tree" (1).
- Add a new "Task" (2).
- For trigger, select "Tags" (3).
- Then select the tag which, when changed, will trigger the event (4).

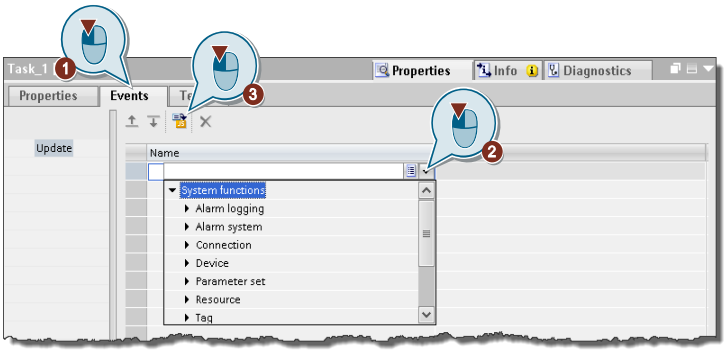
Figure 3-32



2. Adding an event

- Click "Events" (1).
- Then, from the function bar, select the system function or global script that you want to execute (2).
- Optionally, instead of the function bar, you can convert the area into a JavaScript editor and create custom local scripts in this way (3).

Figure 3-33



Note

Once a value change occurs for the tags, the configured function will be run.

Note

On exceeding/falling below a limit

By default, only the function "On value change" is available. However, if you do wish to run a function that exceeds or falls below a limit, you must implement it on the application level using the local scripting (e.g. with "*If... Then... Else*" logic).

3.6 Connections and connection driver

This chapter compares the connections and communication drivers for the Comfort Panel and Unified Comfort Panel.

Table 3-17

Description	RT Advanced	Unified RT
Communication drivers		
Allen-Bradley DF1	●	● (via CSP*)[1)]
Allen-Bradley EtherNet/IP	●	●
LOGO!	●	-
Mitsubishi FX	●	● (via CSP*)[1)]
Mitsubishi iQR/iQF	-	●
Mitsubishi MC TCP/IP	●	●
Modicon Modbus RTU	●	● (via CSP*)[1)]
Modicon Modbus TCP/IP	●	● (via CSP*)[1)]
Omron Ethernet/IP	-	●
Omron Host Link	●	● (via CSP*)[1)]
OPC UA	●	●
SIMATIC HMI HTTP	●	●
SIMATIC S7 200	●	-
SIMATIC S7 300/400	●	●
SIMATIC S7 1200	●	●
Connections (max.)		
S7 connections	8	128

Note

[1)] CSPs (Channel Support Packages) for WinCC Unified will be delivered in stages and can be downloaded from the following link:

https://support.industry.siemens.com/cs/ww/en/view/109779920

Note

You can find more information on connections and configuration options in the corresponding manual under:

WinCC Comfort/Advanced V17: "Communication via connections"
https://support.industry.siemens.com/cs/ww/en/view/109798671/143781646475

WinCC Unified V17: "Connections"
https://support.industry.siemens.com/cs/ww/en/view/109794204/101996673675

CAUTION	The SIMATIC HMI Unified Comfort Panel, compared to the SIMATIC HMI Comfort Panel, requires more connection resources in conjunction with S7 controllers. If you want to convert your Comfort Panel project to Unified Comfort and you are using less powerful S7 controllers (such as the CPU 1511-1), some limitations may apply.

3.6.1 Range pointers

Use a range pointer to access a data range in the controller. During communication, the controller and operator device interact to read to and write from these data ranges. By processing stored data, the controller and operator device mutually trigger defined actions.

Range pointers are required, for example, in the case of the following data:

- Recipes
- Job mailboxes
- Sign-of-life monitoring

Table 3-18

Description	RT Advanced	Unified RT
Screen number	●	-
Data record	●	-
Date/time	●	● (can be implemented on application level if needed)
PLC date/time	●	● (can be implemented on application level if needed)
Global range pointers		
Coordination	●	● (can be implemented on application level if needed)
Project ID	●	● (can be implemented on application level if needed)
Life bit	●	● (can be implemented on application level if needed)
Job mailbox		
Set time of day	●	● (can be implemented on application level if needed)
Adjust the date	●	
Logging on users	●	-
User logoff	●	-
Transfer date/time to controller	●	● (can be implemented on application level if needed)
Update tag	●	-
Delete alarm buffer	●	-
Screen selection	●	● (can be implemented on application level if needed)
Read data record from controller	●	● (System function "LoadAndWriteParameterSet")
Write data record to controller	●	● (System function "LoadAndWriteParameterSet")

Note For a practical example of the application-based implementation of range pointers, see the article "How do you configure area pointers for WinCC Unified HMI operator panels?" at:

https://support.industry.siemens.com/cs/de/en/view/109794243

Note Further information on range pointers can be found in the system manual "WinCC Engineering V17 - Communication" under:

WinCC Comfort/Advanced V17: "Data exchange using area pointers"
https://support.industry.siemens.com/cs/de/en/view/109794203/77423085835

3.6.2 Time synchronization

In order to have the same time throughout the system, you will use time synchronization to synchronize the time of the various components in the system.

Table 3-19

Description	RT Advanced	Unified RT
Time synchronization via integrated connection	●	-
"Date/time" range pointer	●	● (can be implemented on the application level)
"PLC date/time" range pointer	●	● (can be implemented on the application level)
NTP server	●	●

Note Another time synchronization method involved setting an NTP server value through the HMI. To do this, the user selects the desired time on the operator device, then sends it to the PLC where it is set by the relevant block. Thanks to the NTP synchronization with the PLC, the HMI device also receives the time in return.

3.7 HMI alarms

Alarms indicate events, operating states or faults which appear or continue to obtain in your system.

Note You can use the "Data2Unified" add-in to convert your existing alarms (configured in WinCC Comfort/Advanced) to WinCC Unified (see chapter 5.1).

Feature set with WinCC Comfort/Advanced or Unified

Table 3-20

Description	RT Advanced	Unified RT
Number of discrete alarms	4000 (device version prior to 13) 6000 (device version 13 or later)	200 000
Number of analog alarms	500	10 000
Number of alarm classes	32	32
Length of an alarm in characters	80	512
Number of process values per alarm	8	10
Number of queued alarm events	500	Unlimited

Note Additional information how to work with alarms and configure them may be found in the corresponding manual:

WinCC Comfort/Advanced V17: "Working with alarms"
https://support.industry.siemens.com/cs/ww/en/view/109798671/143394181259

WinCC Unified V17: "Configuring alarms"
https://support.industry.siemens.com/cs/ww/en/view/109794204/143344665099

3.7.1 Discrete/analog alarms

Table 3-21

Description	RT Advanced	Unified RT
General information (applies to discrete and analog alarms)		
Events based on alarms	●	● (via Task scheduler)
Alarms can be acknowledged with tag	●	-
Loop-in alarm	●	●
Alarm text configurable	●	● (incl. 9 additional texts)
Alarm context "Origin" and "Range" configurable	-	●
Priority is configurable	-	●
Discrete alarms		
"Discrete alarms" are configurable	●	●
Data types for trigger tags	Counter, (U) Int,	Bool, Byte, Word,

Description	RT Advanced	Unified RT
	Word, Array [..] of (U) Int	DWord, LWord
Evaluation of edge type	-	●
Acknowledgement, state/control tag	●	●
Analog alarms		
"Analog alarms" are configurable	●	●
Data types for trigger tags	Byte, Char, Counter, (L)Real, (U)SInt, (U)Int, (U)DInt, (U)LInt, (D) Word	(L)Real, (U)SInt, (U)Int, (U)DInt, (U)LInt
Dynamic limits (tags for analog alarms)	●	-

3.7.2 Controller and system alarms

Table 3-22

Description	RT Advanced	Unified RT
"Controller alarms" can be imported	●	● (via Runtime settings → Alarms)
"System events" can be imported	●	● (in project texts, category "HMI Runtime")

3.7.3 Alarm classes and alarm groups

Table 3-23

Description	RT Advanced	Unified RT
"Alarm groups" are configurable	●	-
Alarm classes		
"Alarm classes" are configurable	●	●
Acknowledgement of alarm classes (state machine)		
"Alarm without Acknowledgment"	●	●
"Alarm with Acknowledgment"	●	●
"Alarm with optional Acknowledgement"	-	●
"Alarm with Acknowledgement and Confirmation"	-	●
"Alarm without outgoing status and Acknowledgement"	-	●
"Alarm without outgoing status without Acknowledgement"	-	●
Email address is configurable	●	-
Display name is configurable	●	-

Description	RT Advanced	Unified RT
Status texts are configurable	●	● (via Runtime settings → Alarms)
Background color of any alarm class can be edited	●	●
Text color of any alarm class can be edited	-	●
Number of system alarm classes	6	16

Note

The WinCC Unified state machine is completely different than the one in WinCC Comfort/Advanced. For more information on this topic, refer to the system manual "SIMATIC HMI WinCC Unified WinCC Engineering V17 - WinCC Unified" at:

https://support.industry.siemens.com/cs/ww/en/view/109794204/131020995467

3.8 Recipes

Recipes, or parameter sets, collect data that belong together, such as machine parameterizations or production data.

Feature set with WinCC Comfort/Advanced or Unified

Table 3-24

Description	RT Advanced	Unified RT
Designations		
Category	Recipe	Parameter set type
Data record	Recipe data record	Parameter set
Data record element	Recipe element	Parameter
Performance data		
Number of recipes or parameter set types (WinCC Unified)	999 (device version prior to 13) 1000 (device version 13 or later)	1000
Number of elements per recipe[1)] or parameter set type element (WinCC Unified)	2000	1000
Number of data records per recipe or number of parameter sets (WinCC Unified)	5000	5000
Reserved memory for data records in the internal flash storage	-	12 MB [2)]

Description	RT Advanced	Unified RT
Synchronization types		
Coordinated transmission of data records	● (Range pointer "Controller job")	● (Control tag "Parameter set ID" and "Job ID")
Compare recipe tags	●	-
Manual transfer of individual modified values (teach-in mode)	●	-

[1] When using arrays, each array element counts as a recipe element

[2] Expansion with memory card in X51 slot or USB drive at the X61 or X62 port

System functions for recipes/parameter sets

Table 3-25

Description	RT Advanced	Unified RT
Importing and exporting data records		
"ExportDataRecord"	●	● "ExportParameterSets"
"ExportDataRecordWithChecksum"	●	
"ImportDataRecord"	●	● "ImportParameterSets"
"ImportDataRecordWithChecksum"	●	
Read and write data record		
"GetDataRecordFromPLC"	●	● "ReadAndWriteParameterSet"
"GetDataRecordName"	●	-
"GetDataRecordTagsFromPLC"	●	-
"SetDataRecordToPLC"	●	● "LoadAndWriteParameterSet"
"SetDataRecordTagsToPLC"	●	-
Delete data record		
"ClearDataRecord"	●	● via control tag [3]
"ClearDataRecordMemory"	●	-
Other		
"LoadDataRecord"	●	-
"SetRecipeTags"	●	-
"SaveDataRecord"	●	-

3) For more information, see "Transferring and deleting parameter sets automatically"
https://support.industry.siemens.com/cs/ww/en/view/109794204/136297531019

Note

You can find more information on the recipes or parameter sets in the corresponding manual under:

WinCC Comfort/Advanced V17: "Working with Recipes"
https://support.industry.siemens.com/cs/ww/en/view/109798671/143541782411

WinCC Unified V17: "Configuring parameter sets"
https://support.industry.siemens.com/cs/ww/en/view/109794204/143345726475

3.9 Historical data

In WinCC, logs serve to archive process data for the HMI runtime.

A tag log is used to archive process data from an industrial plant.

The purpose of an alarm log is to archive alarms that occur in the process being observed.

Feature set with WinCC Comfort/Advanced or Unified

Table 3-26

Description	RT Advanced	Unified RT
Performance data		
Number of logs	100	100
Number of tags that can be archived per log	6144 (device version prior to 13) 12288 (device version 13) 24576 (device version 14 or later)	5000 (SQLite) Max. number of PowerTags (Microsoft SQL)
Number of entries per log (including all log segments)	500.000	Limited by the size of the storage medium
Number of log segments	400	
Tag and alarm log (general)		
Save format	CSV file with ANSI character set RDB file, TXT file	SQLite database Microsoft SQL
Storage location	Network drive	Network drive
Logs can be shown on operator device	Trend view (tag log) Alarm display (alarm log)	
Logs can be displayed in user-defined form	-	● (via JavaScript)
Logs can be analyzed on PC	CSV	SQLite Browser, CSV (after converting from SQLite)
Configuration of save location	Editor "Archive"	Runtime settings
Logging can be turned on centrally	-	● (via Runtime settings)
Archiving method can be changed (cyclic log, segm. cyclic log, etc.)	●	-

Description	RT Advanced	Unified RT
Tag log		
Configuration area to add tags to tag log	"Data logs" editor → "Logging tags"	-
	"HMI Tags" editor → "Logging tags"	
Compress log contents	-	Smoothing, compression
Acquisition mode		
Cyclic	●	●
On demand	●	●
On change	●	●
System function	●	●
Via limit values	●	●
Via reference tags (tag trigger)	-	●
Smoothing	-	●

Note

Additional information how to work with logs and configure them may be found in the corresponding manual:

WinCC Comfort/Advanced V17: "Working with logs"
https://support.industry.siemens.com/cs/ww/en/view/109798671/143762927627

WinCC Unified V17: "Archiving data"
https://support.industry.siemens.com/cs/ww/en/view/109794204/143345200011

Configuring Logging for SIMATIC WinCC Unified Systems
https://support.industry.siemens.com/cs/ww/en/view/109782859

System functions/snippets for logs

Table 3-27

Description	RT Advanced	Unified RT
"ArchiveLogFile"	●	●
"LogTag"	●	● "WriteManualValue"
"CopyLog"	●	-
"ClearLog"	●	● "ClearAlarmLog", "ClearTagLog"
"OpenAllLogs"	●	-
"CloseAllLogs"	●	-
"StartLogging"	●	-
"StartNextLog"	●	-
"StopLogging"	●	-
JavaScript snippets		
"Read log" (alarm or tag log)	-	●
"Export alarm log as CSV" "Export tag log as CSV"	-	●

Description	RT Advanced	Unified RT
"Add Comment to log tag"	-	●
"Correct logged tag values"	-	●

3.10 Scripts and system functions

System functions are all the default functions supplied with WinCC.

If the default functions are not sufficient for your purposes, you can extend the function with your own scripts.

Feature set with WinCC Comfort/Advanced or Unified

Table 3-28

Description	RT Advanced	Unified RT
Script language	VBScript	JavaScript
Number of scripts	200	Unlimited
Number of functions per function list	16	50
Global scripting	●	●
Local script configurable in the Task scheduler	-	●
Local script configurable with regard to object properties	-	●
Local script configurable with regard to events	-	●
System functions available	●	●
Debugging	●	●
Debugging programs	Script Debugger[1)]	Trace Forwarder[2)], or Chrome Debugger [3)] (for Panel simulation)

[1)] Further information: https://support.industry.siemens.com/cs/ww/en/view/109798671/111974378379
[2)] Further information: https://support.industry.siemens.com/cs/ww/en/view/109777593
[3)] Further information: https://support.industry.siemens.com/cs/ww/en/view/109779192

Note

For additional information on configuring and using JavaScript with SIMATIC WinCC Unified, please refer to the application example "SIMATIC WinCC Unified - Tips and Tricks for Scripting (JavaScript)":

https://support.industry.siemens.com/cs/ww/en/view/109758536

Note

You can find more information on scripts and system functions in the corresponding manual under:

WinCC Comfort/Advanced V17: "Working with system functions and runtime scripting"
https://support.industry.siemens.com/cs/ww/en/view/109798671/143725125387

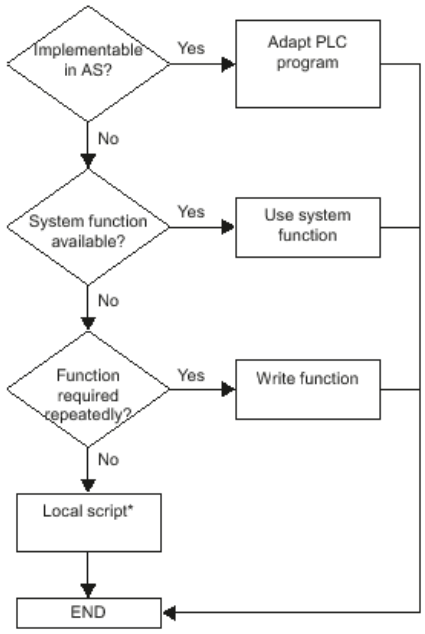
WinCC Unified V17 "Programming scripts"
https://support.industry.siemens.com/cs/de/en/view/109794204/143372474763

WinCC Unified V17: "Using system functions"
https://support.industry.siemens.com/cs/de/en/view/109794204/143349042443

3.10.1 System function or script? (A decision-making aid)

The chart below is a decision-making tool to help you determine when to use a system function, global script function (function), or a local script.

Figure 3-34



3.10.2 System functions in WinCC Unified that require a tag value

In order for the following five system functions to be run, they need a currently valid tag value.

- "InvertBitInTag"
- "SetBitInTag"
- "ResetBitInTag"
- "IncreaseTag"
- "DecreaseTag"

Internal tags with valid tag value

For internal tags, either

- The current value must be written by an object, e.g. a script or an I/O field, or
- The current value must be generated by tag retentive memory.

External tags with valid tag value

For external tags, the following conditions must be met:

- The connection to the PLC has been established,
- the acquisition mode of the tags is "Cyclic in operation", and
- the tag is used by an object, e.g. an I/O field.

Note

For an overview of which system functions are available in which device, please refer to the corresponding manual under:

WinCC Comfort/Advanced V17: "System functions for Comfort Panels"
https://support.industry.siemens.com/cs/ww/en/view/109798671/121290626059

WinCC Unified V17: "System functions"
https://support.industry.siemens.com/cs/ww/en/view/109794204/130553783179

3.11 Scheduled tasks

In Scheduled tasks you will configure the tasks that will be run cyclically or only when a certain condition obtains. Each task has a trigger and an action.

Feature set with WinCC Comfort/Advanced or Unified

Table 3-29

Description	RT Advanced	Unified RT
Number of tasks, time-triggered	48	200 (Tasks, either time-triggered or event-triggered)
Number of tasks, event-triggered	Not relevant for system limit	
Cyclic triggers		
100 milliseconds	-	●
250 milliseconds	-	●
500 milliseconds	-	●
1 second	-	●
2 seconds	-	●
5 seconds	-	●
10 seconds	-	●
1 minute	●	-
1 hour	●	-
Daily	●	●
Weekly	●	●
Monthly	●	●
Annually	●	●
User-defined cycles	-	●

Description	RT Advanced	Unified RT
Acyclic triggers		
Disabled	●	●
Once	●	●
Tags	-	●
Alarms	-	●
Alarm buffer overflow	●	-
Runtime stop	●	-
Screen change	●	- (application-based)
User change	●	-
When a dialog is changed	●	-
When a dialog is closed	●	-
Configurable events		
System functions	●	●
Global script functions	●	●
Local script functions	-	●

Note

For further information on Scheduled tasks, please refer to the corresponding manual under:

WinCC Comfort/Advanced V17: "Planning tasks"
https://support.industry.siemens.com/cs/ww/en/view/109798671/143291907339

WinCC Unified V17: "Planning tasks"
https://support.industry.siemens.com/cs/ww/en/view/109794204/143374199691

3.12 Cycles

The following Table shows you the differences within the cycles between the two systems.

Table 3-30

Description	RT Advanced	Unified RT
Cycle units		
Milliseconds	●	●
Seconds	●	●
Minutes	●	●
Hours	●	●
Days	-	●
Value ranges		
Milliseconds	100…65,535,000	100…2,073,600,000
Seconds	1…65,535	1…3,888,000
Minutes	1…1,092	1…64,800
Hours	1…18	1…1,080
Days	-	1…45
Predefined standard cycles		
100 ms	●	●
250 ms	●	-
500 ms	●	●
1 s	●	●
2 s	●	●
5 s	●	●
10 s	●	●
1 min	●	-
5 min	●	-
10 min	●	-
1 h	●	-
Places used		
Acquisition cycle, external tags	●	●
Archiving cycle, tags	●	●
Trigger(s) for Scheduled tasks	-	●

Note

You can find more information on cycles in the corresponding manual under:

WinCC Comfort/Advanced V17: "Working with cycles"
https://support.industry.siemens.com/cs/ww/en/view/109798671/108442538507

WinCC Unified V17: "Configuring cycles"
https://support.industry.siemens.com/cs/ww/en/view/109794204/143373982347

3.13 Text and graphic lists

The tables below show you the differences in text and graphic lists in WinCC Comfort/Advanced and WinCC Unified.

Note

Additional information and restrictions on the screen objects can be found in the respective manuals at:

WinCC Comfort/Advanced V17: "Working with text lists and graphics lists"
https://support.industry.siemens.com/cs/ww/en/view/109798671/65694994827

WinCC Unified V17: "Configuring text lists and graphic lists"
https://support.industry.siemens.com/cs/ww/en/view/109794204/143374137867

Text lists

Table 3-31

Description	RT Advanced	Unified RT
Performance limits		
Number of text lists	500	2 000
Number of entries per text list	3 500	3 500
Number of text elements	30,000 (device version prior to 13) 40,000 (device version 13 or later)	Unlimited
Usage sites in screen objects		
"Symbolic IO field"	●	●
"Text box"	-	●
"Button"	●	●
"List box"	-	●
"Radio button"	-	●
"Check box"	-	●
Faceplates	-	●
Using objects in text lists		
Use "parameter fields" in text lists	●	-
Use "dynamic parameters (text list)" within a text list	●	-
Use "Control tags" in text lists	●	-

Graphic lists

Table 3-32

Description	RT Advanced	Unified RT
Performance limits		
Number of graphic lists	500	1000
Number of entries per graphic list	3500	3500
Number of graphic objects	2000 (device version prior to 13) 4000 (device version 13 or later)	Unlimited
Usage sites in screen objects		
"Symbolic IO field"	-	●
"Graphic I/O field"	●	-
"Graphic view"	-	●
"List box"	-	●
"Button"	●	●
"Radio button"	-	●
"Check box"	-	●

3.14 User management

TIA Portal offers user management for projects. This makes it possible, for example, to protect a project from unintended or unauthorized changes.

Feature set with WinCC Comfort/Advanced or Unified

Table 3-33

Description	RT Advanced	Unified RT
Number of user groups	50	-
Number of permissions or roles	32	50
Number of predefined function rights		20
Number of users	100	200
User management modes		
Local user management	●	●
Central user management	● (via SIMATIC Logon)	●
User authentication via...		
...username and password	●	●
...password only	●	-
…RFID	●	-

Note

Additional information how to work and configure with user management may be found in the corresponding manual under:

WinCC Comfort/Advanced V17: "Configuring user administration"
https://support.industry.siemens.com/cs/ww/en/view/109798671/128476918027

WinCC Unified V17: "Configuring users and roles"
https://support.industry.siemens.com/cs/ww/en/view/109794204/143374544139

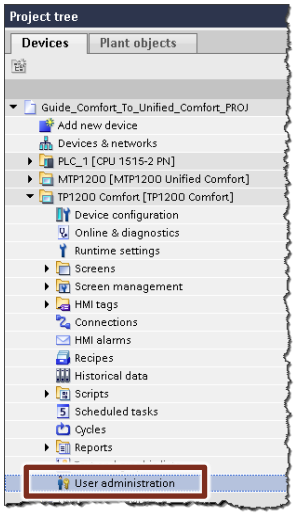
3.14.1 User management in the engineering stage

You can assign different users and permissions to each operator device.

WinCC Comfort/Advanced

In WinCC Comfort/Advanced, you will configure the users in the respective operator device under "User administration".

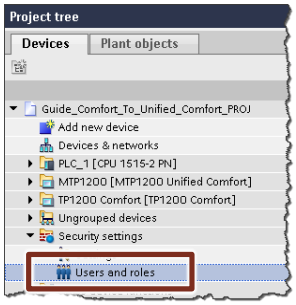
Figure 3-35



WinCC Unified

In WinCC Unified, or with the Unified Comfort Panels, users are created in the project tree under "Security settings > Users and roles".

Figure 3-36



Note As a precondition for signing in a user to the PC runtime, the user and their role must have been set up beforehand during engineering and the user must have been loaded into the runtime.

3.14.2 Logging users in and out within the runtime

The user must log on to the runtime and authenticate himself/herself so that he/she may only perform the actions that he/she is authorized for.

WinCC Comfort/Advanced

In WinCC Comfort/Advanced, you have access to the following system functions in connection with the Comfort Panel and associated user logon/logoff:

- "Logon"
- "ShowLogonDialog"
- "Logoff"

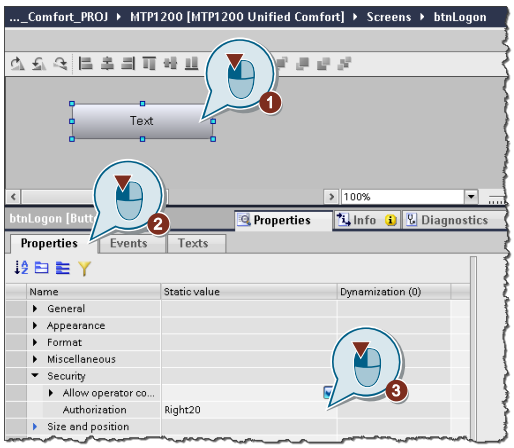
WinCC Unified

Manually log on user

Proceed as follows so that users can log on to the Unified Comfort Panel in the runtime:

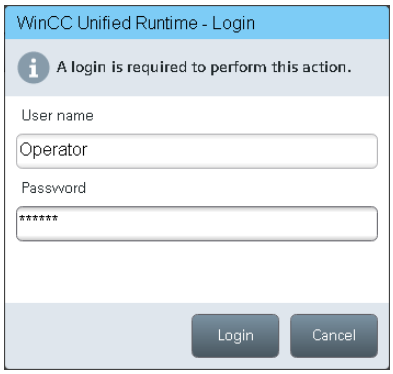
1. Add a "Button" to the screen.
2. Open the "Properties" of the button.
3. Then, in the property "Security > Authorization", assign the button a permission that has not yet been used (one which is not yet assigned to any user).

Figure 3-37



If you press the button in the runtime, the logon dialog will then appear and you can log on with the username and password.

Figure 3-38



Proceed as follows to log yourself on to the Unified PC runtime:

1. In the browser, enter the IP address or the full computer name (fully qualified domain name) of the PC on which Runtime is running, e.g. "https://141.73.65.245/".

   If Runtime is installed on the same PC as the browser, the "localhost" designation can also be used.
2. The Runtime start page appears.
3. Select "WinCC Unified RT".
4. The login page is displayed.
5. Enter the username and password of a user in Runtime and confirm your entry.

   The running Runtime project is displayed.

Note

For more information on logging on to Unified, refer to the system manual "SIMATIC HMI WinCC Unified WinCC Engineering V17 - WinCC Unified" under:

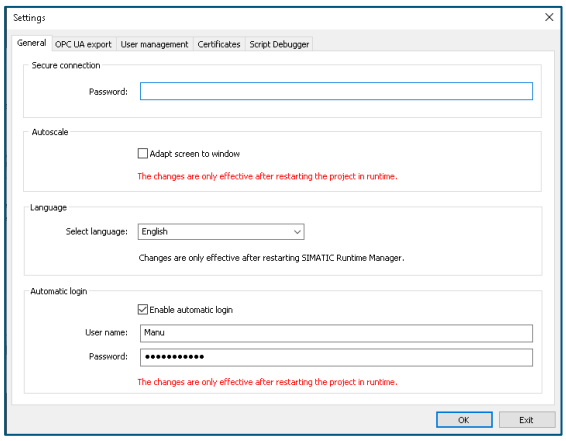
Unified Comfort Panel:
https://support.industry.siemens.com/cs/ww/en/view/109794204/136796318987

Unified PC:
https://support.industry.siemens.com/cs/ww/en/view/109794204/134655543563

Automatically log on a user

As of TIA Portal V17 Update 1, the traditional logon has been supplemented with the ability to log yourself on automatically in the PC runtime. To get started, open the Runtime settings for the current runtime in SIMATIC Runtime Manager (launched as administrator). Then you will have the option of enabling automatic logon with user data.

Figure 3-39



When you start the runtime in a browser later, no logon dialog will appear and you will be logged on to the runtime right away. If you then log out with the user, a "Default user" will still be logged on and you can continue using the runtime, but you will not have elevated permissions. The advantage of this is that the runtime can now be used even without a user logged on.

User logoff

You can again use the system function "Logoff" to log off users in the runtime.

3.15 Basics of operating in Runtime

3.15.1 Two-handed operation of operator controls

WinCC supports two-handed operation of operator controls with RT Advanced and RT Unified. It ensures safe operation of control elements which are used to change critical system settings, for example, control tags with machine limits.

You will define certain control elements as "locked control elements" for two-handed operation of control elements. Locked operator controls usually cannot be operated in Runtime. Operators can only actuate the locked control elements when they press a release button at the same time.

In Runtime, locked control elements can only be accessed with the tab sequence when a release button is pressed at the same time.

Configurable control elements with WinCC Comfort/Advanced or Unified

Table 3-34

Description	RT Advanced	Unified RT
Basic elements	-	●
"IO field"	●	●
"Button"	●	●
"Symbolic IO field"	-	●
"Graphic IO field"	-	●
"Date/time field"	●	-
"Bar"	-	●
"Symbol library"	-	●
"Switch"	-	●
"Slider"	●	●
"Gauge"	-	●
"Clock"	-	●
"Radio button"	-	●
"Check box"	-	●
"List box"	-	●
"Touch area"	-	●
Controls	-	-
"My controls"	-	●
"Graphics"	-	●
Dynamic SVGs/"Dynamic widgets"	-	●

Note The same feature set applies for the configuration in faceplates.

4 Simulating a PC runtime and transferring data

Using the simulator, you will test the behavior of your configuration on the configuration PC. In this manner, you can detect logical configuration errors early on, before production begins.

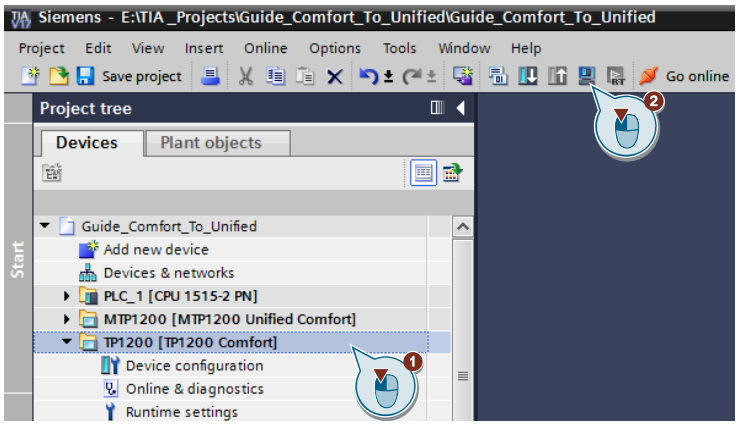
4.1 Simulating an HMI device

WinCC Comfort/Advanced

Proceed as follows to simulate your device in WinCC Comfort/Advanced:

1. Select your Comfort Panel in the Project tree (1).
2. Then click "Start simulation" in the function bar.

Figure 4-1

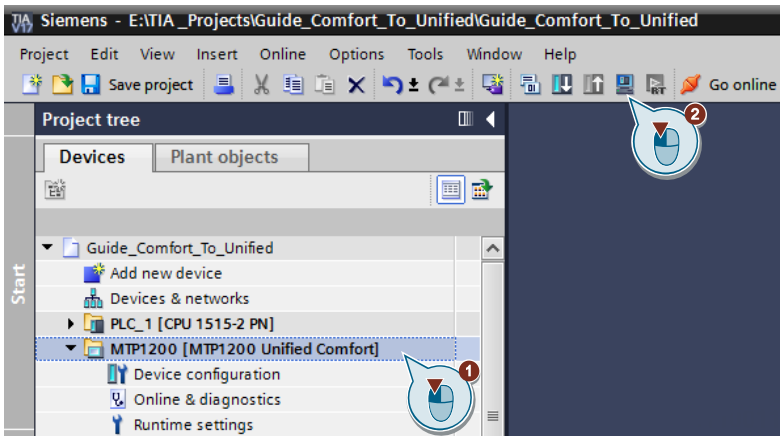


The simulation starts automatically in the foreground.

WinCC Unified

Carry out the following steps to simulate your Unified Comfort Panel in WinCC Unified:

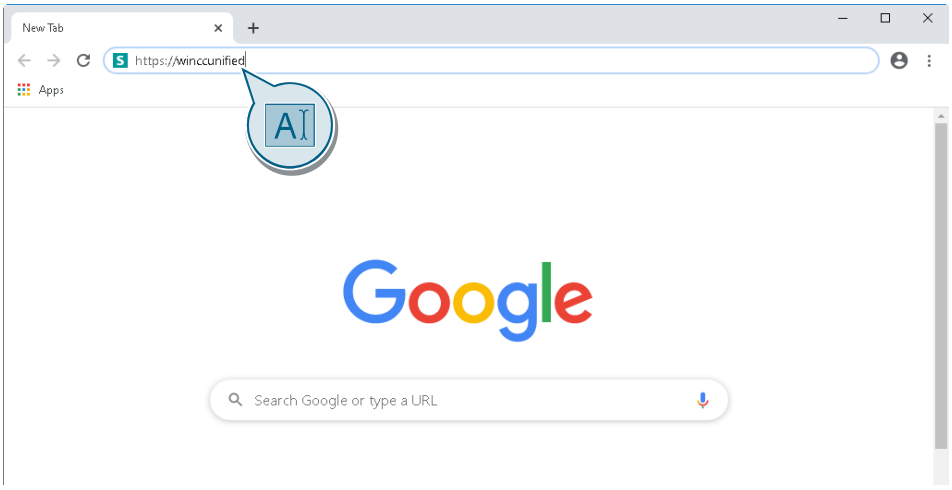
1. Select your Unified Comfort Panel in the Project tree (1).
2. Then click "Start simulation" in the function bar.



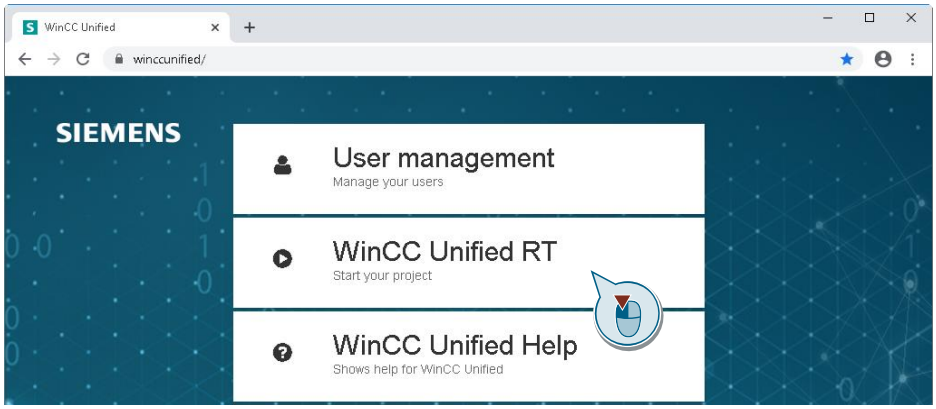
3. Open the Google Chrome browser.

Note Additional information on which browser you can use can be found in the FAQ "Which browser can you use for SIMATIC WinCC Unified?"
https://support.industry.siemens.com/cs/ww/en/view/109757952

4. In the address bar, enter "https://[computer name]", in this case "https://winccunified".



5. Click on "WinCC Unified SCADA RT" to open the project.

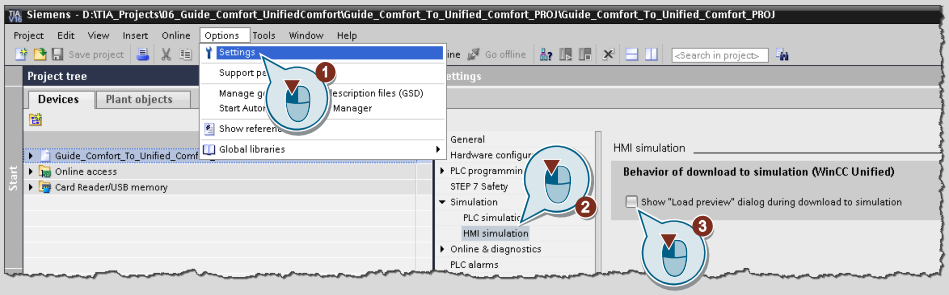


6. Enter the runtime user's "User Name" and "Password" and click "Sign in".
7. The simulation of the HMI device starts.

Note

The browser can also be started automatically as soon as you start the simulation. To do this, you must make the following settings:

1. Open the "Settings" in TIA Portal.
2. Under "Simulation", click "HMI simulation" in the navigation area.
3. Uncheck the check box "Show "Load preview" dialog during download to simulation".



Restrictions in the simulation

When using the simulation, as opposed to the Unified Comfort Panel runtime, there are differences with respect to the following screen objects:

- Trend view:
  - Display additional curve areas
  - Display the legend (not shown on the Panel)
- Alarm view:
  - Usable buttons in the icon bar
  - Filter options
- Faceplates:
  - Scaling for the JavaScript method "OpenFaceplateInPopup"
  - Arrangement of the faceplate containers for the JavaScript method "OpenFaceplateInPopup"
- Screen window:
  - "Adjust size" property
  - Transparency settings for the displayed screen
  - Scaling for the system function "OpenScreenInPopup"
- I/O field: Default view for data type Word and DWord
- Parameter set view: Default view for data type Word
- Browser:
  - S7 web server view
  - PDF file viewing

Note

Additional information on the limitations can be found in the SIOS article "Image downloads for HMI operator devices" under chapter "1.2 Unified Comfort Panels image and readmes" in "Unified_Comfort_Panels_Readme.zip".

https://support.industry.siemens.com/cs/ww/en/view/109746530

5 Useful information

5.1 Data2Unified add-in

The "Data2Unified" add-in offers you the ability 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.

Existing project content can be converted with either Unified Comfort Panels or Unified PC Runtime as a target system.

You can find additional information in the download "Data2Unified Add-in":

https://support.industry.siemens.com/cs/ww/en/view/109770510

6 Appendix

6.1 Service and support

Industry Online Support

Do you have any questions or need assistance?

Siemens Industry Online Support offers round the clock access to our entire service and support know-how and portfolio.

The Industry Online Support is the central address for information about our products, solutions and services.

Product information, manuals, downloads, FAQs, application examples and videos – all information is accessible with just a few mouse clicks:

support.industry.siemens.com

Technical Support

The Technical Support of Siemens Industry provides you fast and competent support regarding all technical queries with numerous tailor-made offers – ranging from basic support to individual support contracts.

Please send queries to Technical Support via Web form:

support.industry.siemens.com/cs/my/src

SITRAIN – Digital Industry Academy

We support you with our globally available training courses for industry with practical experience, innovative learning methods and a concept that’s tailored to the customer’s specific needs.

For more information on our offered trainings and courses, as well as their locations and dates, refer to our web page:

siemens.com/sitrain

Service offer

Our range of services includes the following:

- Plant data services
- Spare parts services
- Repair services
- On-site and maintenance services
- Retrofitting and modernization services
- Service programs and contracts

You can find detailed information on our range of services in the service catalog web page:

support.industry.siemens.com/cs/sc

Industry Online Support app

You will receive optimum support wherever you are with the "Siemens Industry Online Support" app. The app is available for iOS and Android:

support.industry.siemens.com/cs/ww/en/sc/2067

6.2 Links and literature

Table 6-1

No.	Topic
\1\	Siemens Industry Online Support https://support.industry.siemens.com
\2\	Link to the article page of the application example https://support.industry.siemens.com/cs/ww/en/view/109768002
\3\	Getting Started - SIMATIC HMI Unified Comfort Panels https://new.siemens.com/global/en/products/automation/simatic-hmi/wincc-unified/hardware/getting-started-ucp.html
\4\	System manual - SIMATIC STEP 7 Basic/Professional V17 and SIMATIC WinCC V17 https://support.industry.siemens.com/cs/ww/en/view/109798671
\5\	System manual - SIMATIC HMI WinCC Unified WinCC Engineering V17 – WinCC Unified https://support.industry.siemens.com/cs/ww/en/view/109794204
\6\	Operating instructions - SIMATIC HMI HMI devices Comfort Panels https://support.industry.siemens.com/cs/ww/en/view/49313233
\7\	Operating instructions - SIMATIC HMI HMI devices Unified Comfort Panels https://support.industry.siemens.com/cs/ww/en/view/109773257
\8\	Communication Service Packages (CSP) for WinCC Unified in TIA Portal https://support.industry.siemens.com/cs/ww/en/view/109779920
\9\	Demo project for SIMATIC WinCC Unified and SIMATIC HMI Unified Comfort Panels https://support.industry.siemens.com/cs/ww/en/view/109776633
\10\	System manual - SIMATIC HMI WinCC (TIA Portal) WinCC Engineering V17 – Communication https://support.industry.siemens.com/cs/ww/en/view/109794203
\11\	Image downloads for HMI operator panels https://support.industry.siemens.com/cs/ww/en/view/109746530
\12\	Product information - SIMATIC HMI Unified Comfort Panels - Important notes on your device https://support.industry.siemens.com/cs/ww/en/view/109779283/133075980555
\13\	Download – Data2Unified add-in https://support.industry.siemens.com/cs/ww/en/view/109770510

6.3 Change documentation

Table 6-2

Version	Date	Change
V2.0	05/2022	First release of this document "RT Advanced to Unified PC RT"