

SIEMENS

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Readme

Legal information

Warning notice system

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

⚠ DANGER
indicates that death or severe personal injury will result if proper precautions are not taken.

⚠ WARNING
indicates that death or severe personal injury may result if proper precautions are not taken.

⚠ CAUTION
indicates that minor personal injury can result if proper precautions are not taken.

NOTICE
indicates that property damage can result if proper precautions are not taken.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use of Siemens products

Note the following:

⚠ WARNING
Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

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Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

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Validity

Validity

This update is valid for the following products:

- STEP 7 Basic V16
- STEP 7 Professional V16
- WinCC Basic V16
- WinCC Comfort V16
- WinCC Advanced V16
- WinCC Professional V16
- TIA Portal Openness V16

Note

If you modify your system after installing the update with the product DVD, you will have to perform the update again.

Windows 7 and Windows Server 2008 R2: Invalid certificate validation

The new certificates used for signing may possibly not be validated on the Windows 7 and Windows Server 2008 R2 operating systems.

If you do not have the possibility to update the certificate store online, the signature of the product files is displayed as invalid. In this case, update the root certificates provided by Microsoft on the offline systems. To do so, follow the instructions in FAQ 109748887 (<https://support.industry.siemens.com/cs/ww/en/view/109748887>).

Note for installation under Windows 7

The TIA Portal can only be run on Windows systems that support the secure hash algorithm "SHA-2". "SHA-2" is only supported under Windows 7 once a security update has been installed (KB 3033929). Therefore, make sure that the latest Windows security updates are installed on your system.

Improvements in STEP 7

2.1 Improvements in Update 2

Update 2 contains the following improvements and changes:

Working with the TIA Portal

Stability when working with the TIA Portal has been improved, partly based on the feedback from returned crash reports.

SCL: Derived data types in arithmetic expressions

The rules for derived data types have been standardized. It is now no longer permitted to use these data types in arithmetic expressions in SCL.

Example:

The following expression is no longer permissible in V16 Update 2:

```
#myInt := #myHW_IO + 5;
```

In such cases, use a temporary tag of the basic data type:

```
#myTempUInt := #myHW_IO;
```

```
#myInt := #myTempUInt + 5;
```

Alternatively, you can also convert the operand explicitly to the basic data type:

```
#myInt := UINT_TO_INT(#myHW_IO) + 5;
```

FBD: EQ_Type and NE_Type with negated output

It is no longer permissible in the FBD to negate the output of the instructions "EQ_Type" and "NE_Type" with the function "Invert RLO".

Instead of "EQ_Type", use the instruction "NE_Type", and vice versa. Remove the negation of the output.

If you have used one of the two instructions with negated output, check the correct execution of your program after installation of the update.

2.2 Improvements in Update 1

Update 1 contains the following improvements and changes:

Working with the TIA Portal

Stability when working with the TIA Portal has been improved, partly based on the feedback from returned crash reports.

Software units: Monitoring operands with ProDiag (S7-1500)

In the ProDiag overview window of a software unit, you are not permitted to define monitorings for tags that were declared in another software unit. In Update 1, a more precise syntax check is used to check for conformity with this rule. If you have created monitorings of tags in another software unit in your program, a compilation error message is now always generated.

Note for users of the patch for telecontrol configurations for DNP3 and IEC

Before Version V16.0.0.1 (or higher version of V16) can be installed, the patched DLL must be replaced with the original DLL of V16.0.0.0 again.

This correction is also included in Update 1 (and higher).

Description of the OPC UA server of S7-1200 CPUs in the information system of TIA Portal V16

The description of the OPC UA server of S7-1200 CPUs references properties of the S7-1500 OPC UA server that do not apply to S7-1200 CPUs. Example: Behavior of the OPC UA server when downloading.

An updated description of the OPC UA server of S7-1200 CPUs can be found in FAQ 109775168 (<https://support.industry.siemens.com/cs/ww/en/view/109775168>).

DB_ANY_TO_VARIANT (S7-1200/S7-1500)

Starting with V16 Update 1, error code 8155 is always output when an unknown DB is transferred. Output parameter RET_VAL is always set to zero in this case.

Up to now, the instruction only returned error code 8155 when an unknown PLC data type or an unknown ARRAY DB was transferred as an input parameter. In the case of an unknown ARRAY DB whose data blocks are based on a PLC data type (UDT), the error response was undefined.

In order to eliminate error 8155, elsewhere in the program a symbolic use of the ARRAY DB must be interconnected as an actual parameter with a formal parameter of data type VARIANT. To work correctly, it is sufficient if the point of use is downloaded. It is not necessary to execute it.

SCL: Arithmetic expressions and bit logic operations

In V16, the data type of an arithmetic expression did not follow the rules described in the documentation if the expression used both typed operands and untyped constants. In this case, the typed operand determined the data type of the expression, even if the untyped constant had the larger data width.

Starting with V16 Update 1, the following rules apply equally to all calculations with tags and constants:

- The operand with the longer data type determines the data type of the expression.
- If at least one of the data types is signed, signs are used for the calculation.

Example:

SINT + UINT = INT

A data type of the SINT has a length of 8 bits and contains signs. The data type UINT has a length of 16 bits and has no sign. In this case the data type of the expression is INT with a length of 16 bits and has a sign.

Editing function block types in the ProDiag overview editor

In TIA Portal V16, function block types can be changed in the ProDiag overview editor despite being "released". If you then create a test version of the type and release it, the changes will, however, be applied to the correct version.

Improvements in WinCC

3.1 Important notes

Character sets after Windows 10 update

Since Windows 10 Update Version 1809, Windows allows the installation of character sets either with administrator rights for each user (command "Install for all users" in the shortcut menu) or for specific users. In order to use WinCC character sets without restrictions and load them onto an HMI device, the character sets must always be installed with administrator rights.

Note that the "Install" button in the view of a character set only initiates a user-specific installation.

Projects in Runtime after Windows 10 update

You have installed Windows 10 version 1709 on a PC with WinCC Professional and a PC with WinCC Runtime Professional. You have performed a Windows 10 update to version 1803 or version 1809 on the Runtime PC. After the Windows 10 update, it might no longer be possible in Runtime under certain circumstances to:

- Compile a project without errors in the engineering system.
- Open a project loaded by the engineering system PC in Runtime.

Solution: Set the start type of the service for the WinCC SQL instance manually to "Automatic (Delayed Start)" and restart the system.

Changing the installation directory

If you had installed the simulation with an earlier version of WinCC, you can no longer change the installation directory during installation.

3.2 Improvements in Update 2

This update contains the following improvements and changes:

Stability and performance

The stability and performance have been improved, among others, on account of the feedback received.

Screens and screen objects

SVG graphics

The display of SVG graphics has been improved with

- Support for embedded graphics; <image> element
- Support for clip paths; <clipPath> element
- Improvements in removing unsupported SVG elements

3.3 Improvements in Update 1

This update contains the following improvements and changes:

Stability and performance

The stability and performance have been improved, among others, on account of the feedback received.

3.4 Runtime Advanced

3.4.1 Improvements in Update 2

This update contains the following improvements and changes:

Stability and performance

The stability and performance have been improved, among others, on account of the feedback received.

3.4.2 Improvements in Update 1

This update contains the following improvements and changes:

Stability and performance

The stability and performance have been improved, among others, on account of the feedback received.

3.5 Runtime Professional

3.5.1 Improvements in Update 2

This update contains the following improvements and changes:

Stability and performance

The stability and performance have been improved, among others, on account of the feedback received.

WinCC WebUX

The display in operation as monitor user has been improved.

The language switchover in WebUX has been improved.

Screens and screen objects

The performance when changing between screens with faceplates has been improved.

The operability of combo boxes on multi-touch screens has been improved.

3.5.2 Improvements in Update 1

This update contains the following improvements and changes:

Stability and performance

The stability and performance have been improved, among others, on account of the feedback received.

WinCC WebNavigator

The algorithms for password encryption have been improved in the WinCCViewerRT application.

Improvements in WinCC Unified

4.1 Important notes (WinCC Unified)

Information that could not be included in the documentation and important information about product characteristics.

Uninstalling WinCC

If you have already installed an update for WinCC Unified V16 and want to uninstall WinCC V16, proceed as follows:

- Open the Control Panel.
- Start the uninstallation of SIMATIC WinCC Unified PC V16.0 UPDx.
- When selecting the components, select "SIMATIC WinCC Update 16.0 UPDx" for uninstallation.
- After completing this uninstallation, uninstall all desired components of WinCC V16 via the installation medium.

Screen objects

Symbolic IO field

Text lists that are used on a symbolic I/O field may not contain texts exceeding 128 characters.

Graphic objects in Runtime

High-resolution graphic objects require a lot of memory in the project and cause long loading times. They also reduce performance in Runtime.

Use graphic objects with a resolution that is sufficient for a high-quality display in the Runtime project. Note the display resolution of the target device and the size in which the graphic object is displayed on the display of the target device. Adapt the resolution of large graphics objects accordingly before using them in your project.

SVG graphics

The SVG graphics support the SVG 1.2 Tiny standard. Note the following restrictions when using SVG graphics:

- The CSS definitions are converted to inline attributes.
- Embedded scripts and non-local URLs are not supported in the SVG graphics and are removed from the original graphics during conversion when imported into TIA Portal.
- The use of SVG graphics with embedded animations is not supported.
- The use of large SVG graphics affects performance due to the load associated with the increased characters.

4.1 Important notes (WinCC Unified)

- Migration of SVG graphics from WinCC V7 to the TIA Portal is not supported.
- The following SVG characteristics are not supported:
 - Scripting
 - Interactivity
 - Styling
 - Expandability - no ForeignObjects
 - Animations

If screen objects have the value "None" for the "Scale background graphic" property, set the following SVG attributes to display SVG graphics:

- Width: Pixel or percent
- Height: Pixel or percent

It is recommended to specify the value in pixels. If the width and height are not set, the pixel values entered in the SVG attribute "viewbox" are used. This does not apply to Firefox.


Screen objects using an SVG graphic that was scaled in the engineering system as background graphic are not displayed correctly in Chrome in Runtime.

Touch area

The "Touch area" object distinguishes between the following gestures:

- Right
- Links
- Forward
- Backward

You need to program a J-script to differentiate the gestures.

1. Click  in the Inspector window under "Properties > Events > Gesture detected".
2. Copy the code example into the programming window.

Code example

```
export function Touch_area_1_OnGestureDetected(item, gesture) {
// value of tag ,MyTag1` will be set depending on the detected gesture
if(gesture == UI.Enums.HmiGesture.SwipeRight)
{
UI.RootWindow.Screen = 'ScreenRight';
let tag1 = Tags('tag1');
tag1.Write(1); //write value '1234' to tag 'MyTag1'
}
if(gesture == UI.Enums.HmiGesture.SwipeLeft)
{
UI.RootWindow.Screen = 'ScreenLeft';
let tag1 = Tags('tag1');
tag1.Write(2); //write value '1234' to tag 'MyTag1'
}
if(gesture == UI.Enums.HmiGesture.SwipeUp)
{
UI.RootWindow.Screen = 'ScreenUp';
let tag1 = Tags('tag1');
tag1.Write(3); //write value '1234' to tag 'MyTag1'
}
if(gesture == UI.Enums.HmiGesture.SwipeDown)
{
UI.RootWindow.Screen = 'ScreenDown';
let tag1 = Tags('tag1');
tag1.Write(4); //write value '1234' to tag 'MyTag1'
}
if(gesture == UI.Enums.HmiGesture.Unknown)
{
let tag1 = Tags('tag1');
tag1.Write(0); //write value '1234' to tag 'MyTag1'
}
}
```

Tags - "smoothing" mode (Unified Comfort Panel)

The following applies to logging tags and control tags: If the value "No smoothing" is set in the tag properties under "Smoothing > Mode", the values are still smoothed.

Example:

A logging tag changes its value as follows: "100" > "101" > "101".

Even if "No smoothing" is set in the properties of the tag, the values [100, 101] are still stored in the logging database.

Alarms and alarm view

Controller alarms

If the connection between HMI device and controller is interrupted, only the last occurring controller message can be sent and displayed after restarting the runtime software. When the connection is re-established, all controller messages are transmitted correctly again.

Parameter sets and parameter set display

Using parameter set display from V16 project

If you have configured a parameter set display in WinCC V16, open this project with an update for WinCC V16 and load it to the HMI device, the numbers of the parameter sets are not displayed on the HMI device. Proceed as follows to continue using this parameter set display:

1. Create a new project in a new instance of WinCC V16 with installed update.
2. Insert a Unified Comfort Panel or a SIMATIC Unified PC into the project.
3. Copy the devices from the original project into the new project.

Data type for user data type elements of parameter set types

The "Time_Of_Day" data type is not permitted for the user data type elements of a parameter set type.

Data type for control tags of parameter set types

If you use control tags for a parameter set type, the control tags must have a "signed" data type.

Special characters in the parameter set display

The special character ' is not allowed in the value of a parameter set.

Visibility of columns in the parameter set display

Changing the visibility of columns in a parameter set display is not supported. Do not change the default value for the following parameter view property:

"Miscellaneous > Parameter view > Columns > [x] Advanced parameter control view column > Advanced parameter control view blocks".

Data type for dynamization tag of a parameter set type

In a parameter set display, you can specify a dynamization tag under "Properties > General > Fixed parameter set type". If you use a dynamization tag, this tag must have the data type "String" or "WString".

Configuring a storage medium for parameter sets

Select the same storage medium that you have configured for tag persistence or alarm logging under "Properties > Information" for parameter set types. If you specify different storage media, the "EjectStorageMedium" system function is not available.

Importing parameter sets

When you import parameter sets, ensure that the following requirements are met:

- There is no other parameter set with the same display name in any of the configured languages.
- The numerical values in the import file are within the permitted value range of the corresponding configured data type.

Scripting

JavaScript arguments of certain object events

The following applies to the rectangle, pointer instrument, button and circle objects: If you configure a JavaScript to an event, only the "Item" argument is passed correctly to the script. You can process the event in the script, but not the other arguments.

Tag.Write

The Tag.Write method works asynchronously. The Tag.Read method may return unexpected results if the processing of a preceding Write call is not yet complete.

Simulation

Password for simulation

If you have assigned a password for the encrypted transmission on a PC via the setup routine or via the "WinCC Unified Configuration" tool and want to start the simulation on this PC, the same password must be set in the Runtime settings of the device.

Simulation with Windows 10 Professional Update Version 1903

If you install the Runtime software on an initial installation of Windows 10 Professional Update Version 1903, the simulation does not work. Solution: Open the "SIMATIC Runtime Manager" and click the "Refresh" button.

Unified Comfort Panel

Unified Collaboration is not currently supported for Unified Comfort Panels. The configuration in WinCC (TIA Portal) has no effect.

OPC UA is not currently supported for Unified Comfort Panels. A Unified Comfort Panel cannot be operated as an OPC UA server or as an OPC UA client. Activation of the setting "Operate as OPC server" in WinCC (TIA Portal) has no effect.

PROFINET functionality is not available for interface X2.

A fixed IP address must be specified when downloading via Ethernet.

Observe also the notes under: AUTOHOTSPOT

Scheduler - "StartProgram"

Calling up a program via the "StartProgram" system function in the Scheduler is not supported by Unified Comfort Panel. Instead, use a "Tag" trigger in the Scheduler to initiate the system function.

Communication with controllers

The following controllers or communication drivers are supported by the HMI devices:

- SIMATIC S7-1500
- SIMATIC S7-1200
- SIMATIC S7-300/400

4.1 Important notes (WinCC Unified)

Communication with controllers of type S7-200, LOGO! and SIMOTION as well as the SIMATIC HTTP protocol are not supported at this time.

Configuring the NTP server

In WinCC, you can configure up to four NTP* servers for an HMI device. The NTP servers are configured as properties of interface X1 and apply to both interfaces X1 and X2. The NTP function is currently not available for interface X1.

Configure the properties of the NTP servers for interface X1 or specify the NTP servers in the Control Panel of the HMI device. Connect the NTP servers to the HMI device via interface X2.

* *NTP: Network Time Protocol*

Project languages in Runtime

If the language "German" is configured, the Runtime project is always started in German, independent of the defined language sequence.

To start the project in another language, use the "HMIRuntime.Language" system function.

Proceed as follows to start a project once automatically in English:

1. Create a "Bool" type tag, e.g. "doOnlyAtStartup".
2. For the project's startup screen, link the "Loaded" event with the following script:

```
export function Screen_1_OnLoaded(item)
{
    if(!Tags('doOnlyAtStartup').Read())
    {
        HMIRuntime.Language = 1033;
        Tags('doOnlyAtStartup').Write(true);
    }
}
```

To start the project in another language, enter the decimal Windows Locale Code (LCID=Locale ID) for the desired language instead of "1033". You can find the LCIDs on the Internet, for example.

You can find more information on the "HMIRuntime.Language" function in the TIA Portal Information System.

Screen objects for Unified Comfort Panel

The following screen objects are not supported by Unified Comfort Panel:

- f(x) trend view
- Media Player
- Table view
- Trend companion

Operating elements with buttons

Some operating elements such as the trend view or the parameter set display have buttons for which you can configure access rights. To operate access-protected buttons, a user with the required authorization must log on via the Control Panel or a configured operating element, e.g. a button.

Pointer instrument output format

If you specify the value {H} (Hexadecimal) in the Inspector window of a pointer instrument under "Properties > General > Scale > Output format", negative values in the pointer instrument will not be displayed correctly. If you want to output negative values via a pointer instrument, use {F}, {N} or {I} as output format.

Simulation for Unified Comfort Panel

Differences between simulation and Unified Comfort Panel

There are differences in the simulation regarding the following screen objects as compared to the Unified Comfort Panel Runtime:

- Trend control:
 - Buttons available on the toolbar
 - Display of multiple trend areas
 - Display of legend
- Alarm view:
 - Buttons available on the toolbar
 - Filter options
- Faceplates:
 - Scaling in JavaScript method "OpenFaceplateInPopup"
 - Arrangement of the faceplate containers for JavaScript method "OpenFaceplateInPopup"
- Screen window:
 - Property "Fit to size"
 - Scaling in system function "OpenScreenInPopup"
- I/O field: Default display for Word and DWord data types
- Parameter set display: Default display for Word data type
- Browser:
 - Display of S7 Web server
 - Display of PDF files

Simulation in connection with SD-X51

The simulation of tag retentivity and alarm logging in connection with the "SD-X51" storage medium is not supported.

4.2 Improvements in Update 2 (WinCC Unified)

This update contains the following improvements and changes:

4.3 Improvements in Update 1 (WinCC Unified)

Stability and performance

The stability and performance have been improved, among others, on account of the feedback received.

Screens and screen objects

SVG graphics

The display of SVG graphics has been improved with

- Support for embedded graphics; <image> element
- Support for clip paths; <clipPath> element
- Improvements in removing unsupported SVG elements

Alarms and alarm view

Filters in the alarm view

Changes to a filter option are evaluation correctly after re-loading into Runtime.

Unified Collaboration

If the system ID is not changed after a Unified device is copied, an error message is output during compilation. You can open the "Runtime settings collaboration" directly from this message to adapt the system ID.

TIA Portal Openness

If several Unified devices are contained in a project, querying the runtime settings of one device provides correct results.

4.3 Improvements in Update 1 (WinCC Unified)

This update contains the following improvements and changes:

Stability and performance

The stability and performance have been improved, among others, on account of the feedback received.

Usability during configuration of screen objects has been improved.

4.4 Unified PC

4.4.1 Important notes (Unified Runtime)

Information that could not be included in the documentation and important information about product characteristics.

Password for simulation

If you have assigned a password for the encrypted transmission on a PC via the setup routine or via the "WinCC Unified Configuration" tool and want to start the simulation on this PC, the same password must be set in the Runtime settings of the device.

Alarm view

In Runtime, a maximum of 2048 alarms can be displayed in an alarm view.

Scripting - Tag.Write

The Tag.Write method works asynchronously. The Tag.Read method may return unexpected results if the processing of a preceding Write call is not yet complete.

Using a Web server certificate created with the Certificate Manager

If you use a Web server certificate created with Certificate Manager on the Runtime server, re-install the certificate after you install the update.

Loading the logon page

If you experience display problems in the Web client after you install the update, completely delete the browser data (history, form entries, etc.).

4.4.2 Improvements in Update 2 (Unified Runtime)

This update contains the following improvements and changes:

Stability and performance

The stability and performance have been improved, among others, on account of the feedback received.

Using the script debugger

An FAQ with the entry number 109779192 in the SIOS Siemens Industry Support Portal describes activating and starting the script debugger.

Note that the start of the debugger depends on the Google Chrome version used.

4.4.3 Improvements in Update 1 (Unified Runtime)

This update contains the following improvements and changes:

Stability and performance

The stability and performance have been improved, among others, on account of the feedback received.

4.5 Unified Panels

4.5.1 Important Information (Unified Comfort Panels)

Information that could not be included in the documentation and important information about product characteristics.

Unified Comfort Panels

The following changes to the settings of the SOC1 port (X1) require a manual restart of the panel:

- Settings related to the mode and speed of the SOC1 ports
- Deactivation of forwarding of DCP broadcasts
- Deactivation of sending of LLDP
- Activation/deactivation of SNMP

User rights

In contrast to the Unified PC Runtime software, the following applies to a Unified Comfort Panel:

- No logon is required after starting the HMI device.
- If a protected operating element or the protected control panel is opened, the user rights are checked. If the user currently logged on does not have the required rights, a logon window is displayed.
- A user change is possible on the HMI device.

Logging

The "EjectStorageMedium" system function only works correctly in Runtime if you use the storage medium in question for logging.

Logged alarms in the alarm view

Logged alarms are not displayed after starting the Runtime software if the static value "Logged alarms updated" is configured in the alarm view properties under "General > Alarm source". To make logged alarms visible in the alarm view, click the "Show logged alarms" or "Show and update logged alarms" button in the alarm view.

4.5.2 Improvements in Update 2 (Unified Comfort Panels)

This update contains the following improvements and changes:

Stability and performance

The stability and performance have been improved, among others, on account of the feedback received.

Logging

System events of the type "low storage space" are output correctly.

