SIEMENS

SIMATIC

Readme

Readme

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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.

Trademarks

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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

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Validity

This update is valid for the following products:

- STEP 7 Basic V18
- STEP 7 Professional V18
- WinCC Basic V18
- WinCC Comfort V18
- WinCC Advanced V18
- WinCC Professional V18
- WinCC Unified V18
- TIA Portal Openness V18

Note

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

Improvements in STEP 7 2

2.1 Improvements in Update 5

This update 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.

Migrating TIA Portal Classic projects

The integrated migration of Classic projects (*.s7p, *.mcp, *.hmi) is no longer supported as of TIA Portal V18 Update 5.

Use the migration tool to convert the initial project to a migration file that can be read by TIA Portal (*.am18). Following conversion, this file is transferred to the target system and migrated in TIA Portal.

You can find the migration tool in the "Support" directory on the installation DVD of the TIA Portal. Alternatively, it is available for download from the Siemens Industry Online Support.

Software units: Changed downloading behavior (S7-1500)

The downloading behavior of software units was changed so that you can now download individual software units more easily independently of other software units.

When downloading software units a check is carried out whether further software units have to be downloaded as well to ensure the consistency of the ONLINE project.

Previously two software units had to be downloaded together when the following conditions were fulfilled:

1. There is a relation between the software units. The relation is contained both in the offline as well as in the ONLINE project.
2. At the software units on the relations target side an interface-relevant change at the published programming elements was performed since the last download.

The check of the actual usage of changed programming elements is new in V18.00.01.05. If changed programming elements in the dependent software unit are not used, this does not have to be included in the download. Software units can now be downloaded more independently of each other through the additional check.

The following table shows the changed download behavior in detail:

Scenario	Checking during download	Reaction
Software unit on relation source side was selected for download	Check in offline program: Does the software unit to be loaded use interface-relevant changed, published programming elements from the software unit on the relation target side?	If check is met: Software unit on relation target side must be included in the download scope. If check is not met: The selected software unit can be loaded independently.
Software unit on the relation target side was selected for downloading	Check in the ONLINE program: Does the software unit on the relation source side use interface-relevant changed, published programming elements from the software unit to be downloaded?	If check is met: Software unit on relation source side must be included in the download scope. If check is not met: The selected software unit can be loaded independently.

Notes:

- The new check of the downloading dependencies can only be performed once you have downloaded your project once with V18.00.01.05. After an upgrade to TIA Portal V18.00.01.05 we recommend downloading once with the function "Download to device > Software (all)".
- The new check of the downloading dependencies applies for the function "Download to device > Software (only changes)".
  The old downloading behavior still applies for the function "Download to device > Software (with related software units)". Only the first two conditions are checked and possibly a larger number of programming elements included in the downloading scope.

Handing over data blocks as actual parameters

Data blocks which contain both retentive as well as non-retentive elements, can not be handed over to a formal parameter of the data types STRUCT during the block call. A syntax error was not always reported in older versions. Now a syntax error is output in all programming languages.

2.2 Improvements in Update 4

This update 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.

CA certificates of projects from TIA Portal < V17 are not accepted when connecting from/to S7-1500 CPUs

Secure communication from/to S7-1500 CPUs with firmware V3.1 cannot be established if CA certificates are used and the project in use was created with TIA Portal < V17. These CA certificates are not accepted because the "KeyUsage" property is missing and the property "BasicContraints" is not set as "critical".

In this case, follow these steps:

1. Create a new CA certificate with TIA Portal V18.
   - To do this, open the certificate manager under "Project tree > Security functions".
   - Call the context menu command "Create" in the table of the certificate authority (CA). The "Create certificate" dialog opens.
   - Make the desired settings for the new CA certificate and click "OK".
2. Export the newly created CA certificate as a certificate file (PKCS12) with the file extension ".p12".
3. Delete the newly created CA certificate, otherwise it will not be possible to use it in the next action step.
4. Replace the original CA certificate with the exported CA certificate.
   - To do this, open the certificate manager under "Project tree > Security functions".
   - Call the "Replace" command in the context menu of the original CA certificate.
   - In your file system, select the previously exported certificate file with the file extension ".p12" and click "Open".

   All derived device certificates are automatically digitally signed with the renewed CA certificate.
5. Then download all affected devices with the updated certificates.

Namespaces in libraries

All versions of a type must have the same namespace. It is therefore not possible to create a new version of a type and assign it a new namespace. Instead, create a new type with a new namespace.

2.3 Improvements in Update 3

This update 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.

2.4 Improvements in Update 2

This update 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.

Length limitation for names and namespaces in software units (S7-1500)

The namespace and the name of a program element must not exceed the total length of 125 characters. The separators (.) are included.

Previously, separate length limitations of 60 characters each applied to the namespace and 60 characters to the name of the element.

Behavior when exporting objects in the Version Control Interface (VCI)

As of V18 Update 2, SIMATIC ML files exported with Version Control Interface (VCI) no longer display default values. If a change was made to a default value, an entry is written to the exported XML file. This can lead to changes in the behavior when comparing the existing files with the objects in VCI. Run the export again to get the new export format.

Security note on know-how-protected blocks and projects

When protecting blocks, note that full password protection is not provided until you archive the project.

After archiving, only the archived project no longer contains any unprotected blocks.

Optimization of project data during archiving removes older, possibly unprotected project content.

If you want to distribute protected building blocks, only pass on the archived project, or copy the building blocks to a new global library.

2.5 Improvements in Update 1

This update 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.

Port and service name for TIA Administrator V2

TIA Administrator V2 listens at port "8890".

The service of the TIA Administrator V2 that belongs to the process "node.exe" is "SiemensAwb".

TIA Administrator V1 keeps the previous port "8888" and service name "SiemensTiaAdmin".

Service name for TIA Portal project server

The name of the service associated with the process "Siemens.Automation.Portal.Server(.exe)" has been changed from "V[version number]prjsrv" to "prjsrv".

Improved search function in the information system

The search function has been improved with synonym recognition. When you search for a term, defined synonyms of the term are now also found.

Synonym recognition is available in English, German and Chinese.

Improvements in WinCC 3

3.1 Important notes

This page contains important information about product properties

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.

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.

Access to array variables via OPC UA

If you use WinCC Runtime Advanced as OPC UA server, reading array tags is only supported when the "OPC UA Server Array index range access" setting is activated.

Writing array variables is only possible if the OPC UA client supports the "Write array elements without IndexRange" setting.

Integrated Web server: Communication via OPC UA

If the error message 8010_0000 occurs during the communication of the integrated Web server via OPC UA, check the length of the transmitted arrays. If arrays are to be transmitted via OPC UA, the array may only have a maximum of 20 elements.

PLC code view

The performance of the PLC code view when opening the S7-GRAPH overview depends, among other things, on the number of jumps to be displayed.

Detaching a faceplate from the faceplate type

The "Detach faceplate from faceplate type" option is only available for selection if the faceplate type uses more than one screen object.

Search and replace with regular expressions

In the "Search and replace" palette, the "Use regular expressions" additional option is disabled.

3.2 Engineering

3.2.1 Improvements in Update 5

This update contains the following improvements and changes:

Stability and performance

The stability and performance have been improved based on the feedback received and other factors.

HTML browser

HTML files are correctly displayed in the browser.

3.2.2 Improvements in Update 4

This update contains the following improvements and changes:

Stability and performance

The stability and performance have been improved based on the feedback received and other factors.

Events at faceplates

In the editor of the faceplate type the connection between contained objects and events of the "Interface" list is displayed correctly in the "Events" tab.

3.2.3 Improvements in Update 3

This update contains the following improvements and changes:

Stability and performance

The stability and performance have been improved based on the feedback received and other factors.

HTML browser

In WinCC Runtime Professional, the display of the "HTML browser" object in the engineering system has been improved.

3.2.4 Improvements in Update 2

This update contains the following improvements and changes:

Stability and performance

The stability and performance have been improved based on the feedback received and other factors.

Faceplates

When objects are grouped into faceplates, the group gets its own interface. Any existing interfaces of the individual objects are lost.

3.2.5 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.

3.3 Runtime Advanced

3.3.1 Important notes

This page contains important information about product properties

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 context 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.

SIMATIC S7-1500 Software Controller V30.0

The update introduces version V30.0 of the SIMATIC S7-1500 Software Controller.

An integrated HMI connection is only possible with Software Controllers up to version 29.1.

As of Software Controller V30.0, integrated HMI connections are not supported and cannot be configured.

When the version of a configured Software Controllers is upgraded to V30.0, an Advanced Runtime existing on the same station is removed.

Changing the IP address of a device through back-up or DHCP server

Network settings

Please note that the network settings of a device such as the IP address can be overwritten if a backup of the device with different network settings is loaded onto the device, e.g. via the "Restore" function or by inserting a system memory card that has been used for "automatic backup".

Dynamic addressing through DHCP

If the IP address is assigned dynamically to a device through a DHCP server, this may result, for example, after a temporary shutdown of the device, in the project being recompiled or reloaded with modified network settings.

Use reserved, permanently assigned IP addresses as far as possible.

3.3.2 Improvements in Update 5

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.

3.3.3 Improvements in Update 4

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.

3.3.4 Improvements in Update 3

This update contains the following improvements and changes:

Stability and performance

The stability and performance have been improved based on the feedback received and other factors.

PDF view

The toolbar in the PDF display is displayed correctly.

3.3.5 Improvements in Update 2

This update contains the following improvements and changes:

Stability and performance

The stability and performance have been improved based on the feedback received and other factors.

Faceplates

When objects are grouped into faceplates, the group gets its own interface. Any existing interfaces of the individual objects are lost.

3.3.6 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 Professional

3.4.1 Validity

Validity

This update is valid for the following products:

- WinCC Runtime Professional V18

Note

You need to reboot the WinCC Web Configurator after installing the update.

Cybersecurity information

Siemens provides products and solutions with industrial cybersecurity functions that support the secure operation of plants, systems, machines, and networks.

In order to protect plants, systems, machines, and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial cybersecurity concept. Siemens' products and solutions only form one element of such a concept.

It is the responsibility of the customers to prevent unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the Internet if and to the extent such a connection is necessary and only when appropriate protective measures (e.g. firewalls and/or network segmentation) are in place.

For more information on protective industrial cybersecurity measures for implementation, visit:

https://www.siemens.com/global/en/products/automation/topic-areas/industrial-cybersecurity.html (https://www.siemens.com/global/en/products/automation/topic-areas/industrial-cybersecurity.html)

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are outdated or no longer supported may increase the customer's exposure to cyber threats.

To stay informed about product updates at all times, subscribe to the Siemens Industrial Cybersecurity RSS Feed under:

https://new.siemens.com/global/en/products/services/cert.html (https://new.siemens.com/global/en/products/services/cert.html)

3.4.2 Important notes

This page contains important information about product properties

Note

If Runtime is operated in kiosk mode with disabled shortcut keys in full-screen, you should disable access to online help in the ActiveX controls, otherwise the operator can gain access to the operating system.

Character sets after Windows 10 update

Since Windows 10 Update Version 1809, Windows allows to install 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.

Deactivating NTLMv1 and SMBv1

The NTLMv1 and SMBv1 protocols can be disabled. Deactivating the protocols does not have any effect on the operation of WinCC Runtime Professional.

Note

Security risk from NTLMv1 and SMBv1

Use of the NTLMv1 and SMBv1 protocols is a significant security risk. Communications in the network could be compromised, for example, by man-in-the-middle attacks.

Depending on the operating system, the procedure for deactivating the protocols can be different.

Scripts on the WebUX or WebNavigator server

C or VBS scripts triggered by services such as Global Script, Alarm Logging, or Tag Logging are independent of Graphics Runtime and therefore run only on WebUX or WebNavigator servers.

- Any output of such functions, e.g. via printf() or HMIRuntime.Trace(), is not visible in the script diagnostics window on a WebUX or WebNavigator client.
- All access to Graphics Runtime from such functions are always made to the local Graphics Runtime of the WinCC server.

Installing "Siemens.Automation.WinCC Project CA" certificate on a WebUX/Web Navigator Client

To install the "Siemens.Automation.WinCC Project CA" certificate on a WebUX or Web Navigator Client, follow these steps:

1. Export the "Siemens.Automation.WinCC Project CA" certificate in the "Base-64-encoded X.509 (.CER)" format from the WebUX or WebNavigator Server, for example by using the WinCC Certificate Manager.
2. On the WebUX/Web Navigator Client in the Windows Start menu select the command "Run**"** and enter "certlm.msc" to start the certificate manager of the local device.
3. Under "Certificates - Local computer > Trustworthy root certification bodies" select the folder "Certificates".
4. Open the shortcut menu of the folder and select "All tasks > Import...".
5. Import the certificate exported from the server.

Automatic logout on multi-touch devices

To ensure that a configured automatic logout works on devices with a multi-touch screen even when using SIMATIC Logon V1.6 Update 3, configure any function, for example, to set a bit of a tag to the "Touched" event of the screen. This resets the logoff time timer when the screen is touched.

Recipes

To ensure optimal performance of the recipe view in Runtime, it is recommended to create no more than 500 recipe queries or 500 recipe query elements.

If, when importing data records, it is determined that a data record ID to be imported already exists in the user log, an error message is generated. An entry for the error message is stored in the log file "UALogFile.txt". The data records whose IDs do not exist in the user log are added as new data records.

Using the "GetTagDateTime" function

To ensure that the correct values are returned when using the "GetTagDateTime" function, the "GetTagDoubleWait" function should additionally be executed before the first call.

Alternatively, use the "GetTagDateTimeWait" function.

3.4.3 Important changes in behavior

WinCC Professional OPC UA: Updating the OpenSSL version

As of WinCC Professional V17 Update 7, OpenSSL 3.0 is used for WinCC OPC UA.

If the OPC UA certificate of an HMI device with WinCC was created before V17 Update 7, it becomes incompatible through the device upgrade. Recreate the certificate.

HMI device uses a self-signed certificate

1. Delete the certificate from the certificate store before upgrading the HMI device:
   - OPC UA client certificate:
     `C:\Program Files (x86)\Siemens\Automation\SCADA-RT_V11\WinCC\OPC\UAClient\PKI`
   - OPC UA server certificate:
     `C:\Program Files (x86)\Siemens\Automation\SCADA-RT_V11\WinCC\OPC\UAServer\PKI`

   Delete both the DER file and the PFX file.
2. Upgrade the HMI device.
   The certificate is automatically created and installed.
3. Trust the certificate on the communication partners.

HMI device uses CA-based certificate created with third-party tool

1. Delete the third-party root certificate and the OPC UA application certificate from the certificate store before upgrading the HMI device:
   - OPC UA client certificate:
     `C:\Program Files (x86)\Siemens\Automation\SCADA-RT_V11\WinCC\OPC\UAClient\PKI`
   - OPC UA server certificate:
     `C:\Program Files (x86)\Siemens\Automation\SCADA-RT_V11\WinCC\OPC\UAServer\PKI`

   Delete both the DER file and the PFX file of the application certificate.
2. Upgrade the HMI device.
3. Upgrade the third-party tool to a version that uses OpenSSL 3.0.
4. Recreate the OPC UA certificate of the HMI device with the tool.
5. To install the certificate on the HMI device, copy it to the certificate store on the HMI device:
   - OPC UA client certificate:
     `C:\Program Files (x86)\Siemens\Automation\SCADA-RT_V11\WinCC\OPC\UAClient\PKI`
   - OPC UA server certificate:
     `C:\Program Files (x86)\Siemens\Automation\SCADA-RT_V11\WinCC\OPC\UAServer\PKI`

If the communication partner already trusts the root certificate of the certificate authority, it automatically also trusts the newly created OPC UA certificate of the HMI device.

3.4.4 Improvements in Update 5

This update contains the following improvements and changes:

Stability and performance

Stability and performance have been improved based on feedback, among other things.

HTML browser

The HTML files are correctly displayed in the browser.

3.4.5 Improvements in Update 4

This update contains the following improvements and changes:

Stability and performance

Stability and performance have been improved based on feedback, among other things.

Passwords

The character % can be used in a password.

Loading fully

The routines for fully loading projects has been improved.

Object focusing in Runtime

The logic of the object focusing after, for example, a mouse-click has been improved.

Recipe view

The display of the recipe view in Runtime has been improved. The columns show the configured behavior, for example, in particular with regard to visibility and sortability.

Screen window

When using multiple screens the display of screen windows takes place in accordance with the configuration.

HTML browser

Also files that are stored in a location other than the "Download" project folder are displayed correctly in the "Browser" control.

WString tags in a user data type

Tags of the data type WString which are used in a user data type are displayed fully in Runtime.

Communication

The setup of the connection to the control system is possible, even if the name of the access point is shorter than 3 characters.

WebUX

For WebUX the login via Simatic Logon is possible, even if an invalid login attempt took place beforehand.

3.4.6 Improvements in Runtime Update 3

This update contains the following improvements and changes:

Stability and performance

Stability and performance have been improved based on feedback, among other things.

Gauge and slider in faceplates

When the "Gauge" and "Slider" objects are used in a faceplate and text-based properties are supplied with values via the interface, both static and dynamic values are output correctly in runtime.

Communication with GuardLogix and ControlLogix

During communication with GuardLogix and ControlLogix via Allen-Bradley Ethernet/IP, tags of data types UDInt, UInt and USInt are also displayed correctly in WinCC Runtime.

3.4.7 Improvements in Runtime Update 2

This update contains the following improvements and changes:

WebUX

Stability and performance have been improved.

The display and dynamization of screens and screen objects has been improved.

The configuration dialog has been improved.

WebNavigator

Stability and performance have been improved.

The WinCC WebBrowserControl (Chromium) has been improved.

Diagnostics

The system diagnostics display has been improved.

Channel diagnostics has been improved.

3.4.8 WinCC Certificate Manager

3.4.8.1 Introduction

WinCC Runtime Professional supports the use of CA-based HMI certificates (CA = Certificate Authority). You provide these certificates with the "WinCC Certificate Manager" application.

Note

No external certificate authority

Issuance, distribution and installation of these certificates requires the use of the Certificate Manager.

The use of an external certificate authority or an intermediate certificate authority is not supported.

Functionality of the WinCC Certificate Manager

- Central creation and management of certificates in the network
- Creation of a certificate authority with:
  - Private key
  - Public key (root certificate)
  - CRL file (CRL = Certificate Revocation List)
- Issuance of the application certificates of the HMI devices
- Renewing existing certificates
- Encrypted export of the application certificates as well as the root certificate for manual distribution to HMI devices
- Encrypted import and installation of the certificates on the HMI devices
- Encrypted export and import of the root certificate, CRL file, and private key, as well as all device certificates for data backup and restore.
- Export of the root certificate and its CRL file for distribution to external communication partners of the HMI device
- Export of an updated CRL file for distribution to the HMI devices and their external communication partners

Available application certificates

With WinCC Certificate Manager you can create the following CA-based application certificates for WinCC Professional HMI devices:

- WebUX | WebNavigator certificate
- OPC UA server certificate
- OPC UA client certificate
- OPC UA tag import certificate

3.4.8.2 Making certificates available

Procedure

The procedure for providing the certificates as well as the operation of the Certificate Manager interface is largely the same for WinCC Professional and WinCC Unified. Follow the steps described in the WinCC Unified Certificate Manager user help.

You can find more information on the WinCC Unified Certificate Manager in Entry ID 109813308 in the Siemens Industry Online Support Portal in the "SIMATIC HMI WinCC Unified Engineering V18" help under "Runtime and Simulation > Certificate Manager".

Restrictions and special features

Deviating from the procedures and facts described in the user help for WinCC Unified Certificate Manager, the following applies to WinCC Professional:

Generation of application certificates

You can only generate the application certificates listed in section AUTOHOTSPOT.

Device binding of the certificates

When adding a device to the certificate authority, you specify what information is used to bind its application certificates to the device.

In the "New device" dialog, you have the option of entering multiple IP addresses in the "IP" field. Use ";" as separator.

Note

Enter the IP address of the device (own IP) as the first IP address.

The IP addresses are added to the Subject Alternative Name of the certificate.

Example: An HMI device is an OPC UA server and has a NAT router. The OPC UA clients communicate with the server via the NAT router. Enter the private IP address of the OPC UA Server HMI device (own IP) and the public IP address in Certificate Manager.

Distribution and installation of the application certificates

To distribute the certificate configuration of the certificate authority to the HMI devices and to install the certificate configuration of an HMI device on the device, follow the steps described

in the WinCC Unified Certificate Manager user help for export, import and installation on Unified PCs.

For more information, see Entry ID 109813308 in the Siemens Industry Online Support Portal in the "SIMATIC HMI WinCC Unified Engineering V18" help under "Runtime and Simulation > Certificate Manager > Export, Import and Installation for Unified PCs".

Binding of the WebUX | WebNavigator certificate to the Runtime web page

If the Runtime Server web page has already been set up and you install the WebUX | WebNavigator certificate on the HMI device with Certificate Manager, the installation automatically binds the certificate to the Runtime web page.

If the website has not been set up yet, the binding cannot be performed successfully. Certificate Manager logs this via an entry in the "Output" area.

Installation of the root certificate on the WebUX/WebNavigator clients

To display Runtime in a WebUX/WebNavigator client, the root certificate of the WebUX/ WebNavigator application certificate must be installed as trustworthy on the client. It is not necessary to install the root certificate manually in the following cases:

Runtime access	Display via	Requirement
Local	WinCCViewerRT or Internet Explorer	The WebNavigator certificate has been installed on the HMI device with Certificate Manager.
	Chrome or Edge	The WebUX certificate has been installed on the HMI device with Certificate Manager.
Remote	WinCCViewerRT or Internet Explorer	The WebNavigator client device is also an HMI device. It has the same certificate authority as the HMI device, whose Runtime it displays in WinCCViewerRT or Internet Explorer. The server HMI device has a WebNavigator certificate. On both HMI devices the certificate configuration of the respective device has been installed with Certificate Manager.
	Chrome or Edge	The device of the WebUX client is also an HMI device. It has the same certificate authority as the HMI device, whose Runtime it displays in Chrome or Edge. The server HMI device has a WebUX certificate. On both HMI devices the certificate configuration of the respective device has been installed with Certificate Manager.

In other cases, install the root certificate manually on the WebNavigator clients and WebUX clients. Follow the steps described in section AUTOHOTSPOT.

3.4.8.3 Installing a root certificate manually

This section describes how to install the root certificate in order to display Runtime Professional in a WebUX/WebNavigator client.

Requirements

- On the certificate authority device:
  - A certificate authority has been created with WinCC Certificate Manager.
  - The Runtime Server HMI device has been added to the certificate authority and a WebUX | WebNavigator certificate has been added to the HMI device.
  - The certificate configuration of the HMI device has been exported.
- On the HMI device:
  The certificate configuration of the HMI device has been installed with WinCC Certificate Manager.
- On the WebUX/WebNavigator client devices:
  - To display Runtime in a browser, the desired browser must be installed on the WebUX client device.
  - To display Runtime in Internet Explorer, the WebNavigator client must also be installed on the WebUX client device.
  - To display Runtime with WinCCViewerRT, the WebNavigator client must be installed on the WebNavigator client device.

Procedure

1. Export the root certificate on the certificate authority device using Certificate Manager.
   Follow the steps described in the WinCC Unified Certificate Manager user help.
2. Transfer the exported root certificate file to a storage location that the WebUX/ WebNavigator client device can access, such as a network folder or external storage medium.
   Follow the steps described in the WinCC Unified Certificate Manager user help.
   Your further procedure depends on which client you are using.
3. Edge and Chrome as the WebUX client:
   - Double-click the root certificate file on the WebUX client device.
     The root certificate is opened with the Windows standard form.
   - Select "Install Certificate".
   - In the certificate import wizard, select "Local Machine" as the storage location, "Trusted Root Certification Authority" as the certificate store.
   - Start the import.

4. Browser with its own certificate store as a WebUX client:
   Manually install the root certificate on the WebUX client device in the certificate store of the browser. Follow the steps described in the user help of the browser.
   For Firefox, for example, follow these steps:
   - In Firefox, click "Display certificates" under "Settings > Privacy & Security" under "Certificates".
   - In the "Certificate Management" window, select the "Certification authorities" tab.
   - Click "Import" and select the root certificate file.
   - In the window that opens, select the option "This certificate can identify websites" and confirm your selection.
5. Internet Explorer or WinCCViewerRT as WebNavigator client:
   On the WebNavigator client device, manually copy the root certificate file in the Windows system certificate store to the trusted certificate authorities folder.

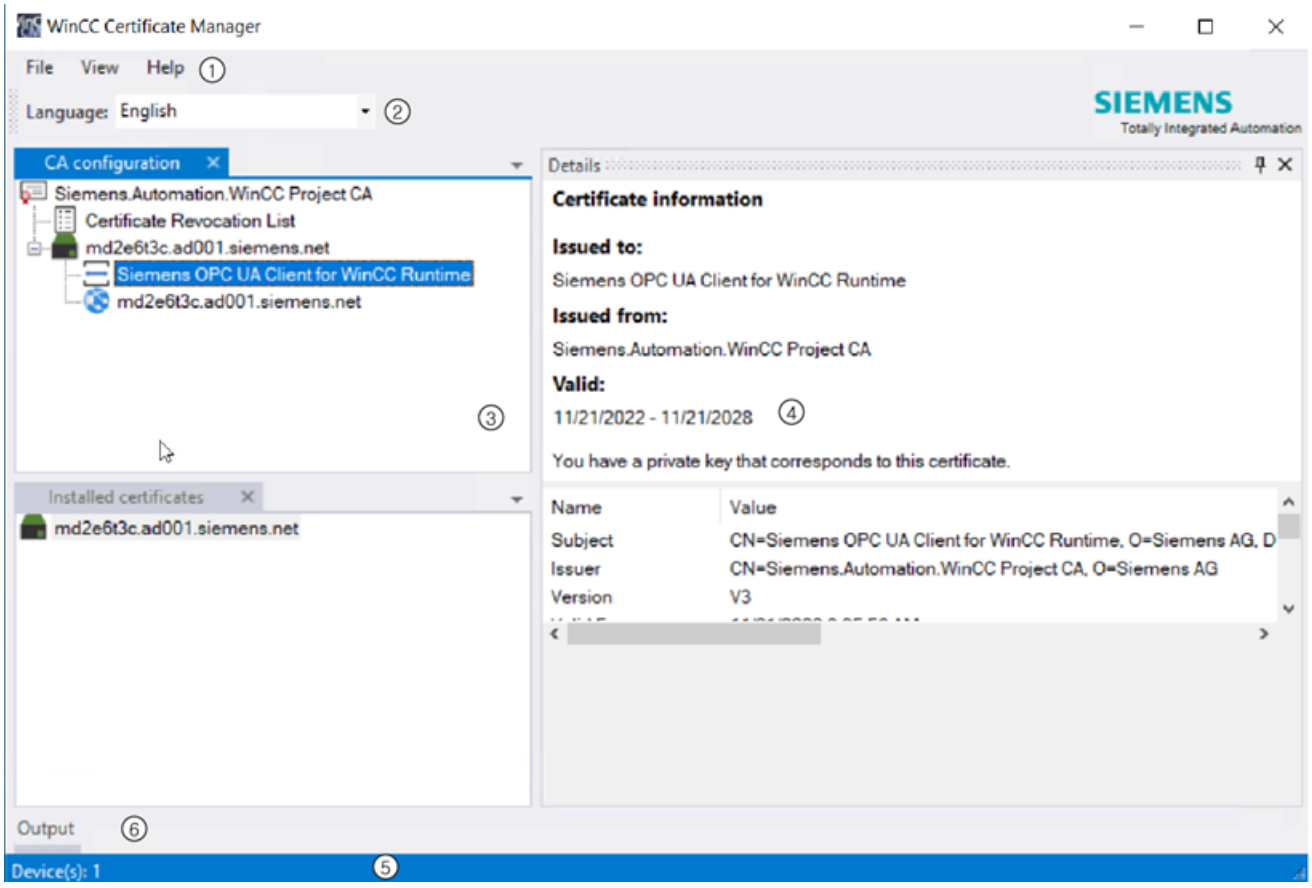
Result

The next time the client tries to connect the WebUX/WebNavigator client with Runtime, the client trusts the root certificate and thus also the WebUX certificate or the WebNavigator certificate from Runtime.

3.4.8.4 Structure of the user interface

Overview

The interface of WinCC Unified Certificate Manager has the following structure:



① Menu bar

② Toolbar

③ Work area with the "CA configuration" and "Installed certificates" tabs

④ "Details" area (fixed)

The "Details" area shows you detailed information about the certificate selected in the work area.

⑤ Information bar

⑥ "Output" area (hidden)

The "Output" area logs operator control actions.

You can customize the display of the interface to suit your needs. Follow the steps described in the WinCC Unified Certificate Manager user help.

Menu bar

Menu	Description
"File > Exit"	Closes Certificate Manager.
"View"	Configure which Certificate Manager interface elements you see. You can open or close the following interface elements: • "Output" area • "Details" area • "CA configuration" tab • "Installed certificates" tab
"Help"	"About Certificate Manager" Opens a dialog with information about the installed software version.

Toolbar

Button	
	To change the user interface language

3.5 Panels

3.5.1 Improvements in Update 5

This update contains the following improvements and changes:

Visual Studio 2010 Redistributables

The EoL versions of Visual Studio 2010 Redistributables have been removed from this update.

It is thus no longer possible to download a project to HMI SIMATIC Basic Panels V11 or V12 or to simulate the HMI SIMATIC Basic Panels V11 to V15.

If HMI SIMATIC Basic Panels of the named versions are still needed, you must install the missing Visual Studio Redistributables manually. Please note that an EoL version can have security vulnerabilities. You are solely responsible if you install such as version.

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.

Improvements in WinCC Unified

4

4.1 Validity

Validity

This update is valid for the following products:

- WinCC Unified V18
- WinCC Unified Runtime V18

Cybersecurity information

Siemens provides products and solutions with industrial cybersecurity functions that support the secure operation of plants, systems, machines, and networks.

In order to protect plants, systems, machines, and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial cybersecurity concept. Siemens' products and solutions only form one element of such a concept.

It is the responsibility of the customers to prevent unauthorized access to their plants, systems, machines and networks. Such systems, machines and components should only be connected to an enterprise network or the Internet if and to the extent such a connection is necessary and only when appropriate protective measures (e.g. firewalls and/or network segmentation) are in place.

For more information on protective industrial cybersecurity measures for implementation, visit:

https://www.siemens.com/global/en/products/automation/topic-areas/industrial-cybersecurity.html (https://www.siemens.com/global/en/products/automation/topic-areas/industrial-cybersecurity.html)

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends that product updates are applied as soon as they are available and that the latest product versions are used. Use of product versions that are outdated or no longer supported may increase the customer's exposure to cyber threats.

To stay informed about product updates at all times, subscribe to the Siemens Industrial Cybersecurity RSS Feed under:

https://new.siemens.com/global/en/products/services/cert.html (https://new.siemens.com/global/en/products/services/cert.html)

4.2 Important notes

This page contains important information about product properties.

Device versions with V18 Update 3

The new device version 18.0.0.3 has been introduced for Unified PC and Unified Panels in order to be able to use the new functions which were introduced with V18 Update 3. Please note the following:

- If you open a project on a computer on which TIA Portal V18 is installed without an update, you cannot edit the devices contained there with device version 18.0.0.3.
- If you switch from a device version 18.0.0.3 to a previous device version, you can no longer use new functions.
- The functions introduced with V18 Update 3 are also supported by higher device versions.

Unified PC

- Install Update 3 for WinCC Unified Runtime on the target device before loading a device with device version 18.0.0.3.
- If you load a device with the configured device version 18.0.0.0 onto a Runtime with a higher device version, warnings are displayed pointing out the different versions. To avoid incompatibilities, the projected device version should correspond to the actual Runtime version.
- If your project contains the "GRAPH overview" or "PLC code display" screen objects, you must update the projected device version and reload the device after installing the Unified Runtime update.

Images for Unified Panel

- Images can be downloaded from the Industry Online Support.
- Images are released independent of WinCC (TIA Portal).
- Use ProSave to import an image version that does not correspond to the configured device version onto a panel.
- If a new image only contains improvements for the runtime of the device, this version is not shown in the engineering system. In this case, use the latest device version displayed in the engineering system.
- If the image 18.0.0.0 is installed on the device, install image download version V18.0 Upd.3 or higher before you load a device with the configured device version 18.0.0.3. When loading this device, activate the setting "Keep aspect ratio" in the "Load preview" dialog so that the new image version is transferred to the Panel. Alternatively, use ProSave.
- If you load a device with the configured device version 18.0.0.0, it is not absolutely necessary to update the image on the Panel. If you load a device with the configured device version 18.0.0.0 onto a panel with a higher device version, warnings are displayed pointing out the different versions. You can ignore them.

Processes for WinCC Unified Simulation

Additional processes and services are also installed during the installation of the TIA Portal or components of the TIA Portal. You can find an overview of these processes, the associated services and their respective functions in the information system under "Installation > Overview of Processes and Services of TIA Portal Components".

The following processes for WinCC Unified Simulation are not listed in the information system for TIA Portal V18:

Process	Corresponding service	Function
UAAppStarterHost.exe	UAAppStarterHost.exe	System function to jump from the web client to the TIA Portal for ProDiag scenarios.
OpcUAServerRTIL.exe	OpcUAServerRTIL.exe	Provides access to WinCC Unified via OPC UA protocol.
webums.exe	-	Web interface for user management with User Management Component (UMC) to manage UMC objects.
REPDataProviderHost.exe	-	Reporting enables the configuration of templates and the creation of Excel and PDF-based reports on production data.
WCCILgraphQLServer.exe	GraphQL server	GraphQL Web API

Upgrading a device version and logging data

When you upgrade the device version of the Unified device, the logging data is adapted to the new database scheme when the project is loaded.
This process is irreversible. The logging data can no longer be read with a lower device version.

Character sets after Microsoft 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.

Microsoft Edge limitation

If you want to start Runtime in Microsoft Edge and enter the address "https://localhost", the error message "INET_E_RESOURCE_NOT_FOUND" appears. In this case, use the address "https://localhost/WebRH".

Use the latest browser version (for V18 Update 3: Microsoft Edge version 116 or higher).

Unexpected closing of the web client deletes the cookies that are necessary for displaying Runtime. A corresponding notice is displayed when the client is restarted. After a few seconds, Runtime reloads the page automatically, thereby restoring the cookies.

Find and replace with regular expressions

In the "Find and replace" pane, the "Use regular expressions" option is disabled.

Alarm texts

Alarm texts cannot reference tags directly via the tag ID but only via an alarm parameter.

Alarm texts cannot reference any text lists which reference tags via their ID.

Proceed as follows to use a text list which references a tag in an alarm text:

1. Define an alarm parameter which references the desired tag.
2. In the alarm text use this alarm parameter to address the tag which controls the text list.

Text lists

Only tags with the data type integer can be used to reference entries of a text list.

Text box

In the text box of the height 20 px and smaller a scroll bar in light and dark style is displayed in the Engineering System and in Runtime. To avoid the scroll bar, select the height of the text box larger than 20 px.

IO field: Display of the value

By default, the IO field is displayed without content. When you configure a value not equal to 0, the value is displayed in the IO field based on the selected output format.

IO field: In scripting

The properties "MeasurementUnit" and "MeasurementUnitType" of an IO field are reserved in scripting for future versions.

Slider and bar

In the slider and bar, a line near the value "0" is visible in the light and dark style when the initial value "0" is entered.

Runtime scripting

When you create an Alarm Subscription in Runtime Scripting, the tag that contains the Subscription must be defined globally. To do this, create a tag under "Global definition".

System diagnostics control

If you are using the S7-1200/1500 HMI connection, it is not possible to open or navigate to the lower-level views in the matrix view. Only the station/start view is displayed.

This occurs in the following cases:

- The PLC access level is set to "HMI access" and no password is set for the HMI connection.
- The PLC access level is set to "No access (full protection)" and an HMI access password is set for the HMI connection.

In the diagnostic buffer view, there is a restriction with the resolution of placeholders in the texts.

SVG graphics

In an SVG graphic, the corner points of a polyline must be defined directly, for example <polyline points="100.100 150.25 150.75 200.0">.

In an SVG graphic, the XML element <defs>...</defs> must be located directly at the beginning of the SVG code.

An SVG graphic can be imported only if it contains the <hmi:self> XML element.

Trend controls on Unified Panel

Due to different sampling frequencies, slight differences occur in the representation of a trend view in the simulation and on a Panel if the time range of the X axis is chosen very small. No differences are apparent for time ranges greater than 5 minutes.

If the axes of a trend control are displayed dynamically on a Unified Panel, the trend area is enlarged to make optimal use of the available space, especially on panels with small display diagonals. This behavior is not detectable in the simulation.

f(x) trend controls on Unified Comfort Panel

If the axes of an f(x) trend control are displayed dynamically on a Unified Panel, the trend area is enlarged to make optimal use of the available space, especially on panels with small display diagonals. This behavior is not detectable in the simulation.

Trend control: Bit-triggered trends

Bit-triggered trends are not supported in the control "Trend view".

Parameter set control

Parameter set control on Panels

The use of a fixed parameter set type in a parameter set control on Unified Panels results in erroneous behavior.

Extensive parameter set types

If errors while reading and writing PLC data occur in the context of large and nested parameter set types, copy the affected parameter set type and insert it again.

Renewed loading of the Unified Panel after updating of the CPU configuration

If the configuration of the CPU is changed and loaded into the control unit, the PLC communications certificate of the control unit is updated.

In this case the Unified Panel connected with the CPU also has to be reloaded. After loading, the panel trusts the PLC certificate.

Dynamization of screens in screen windows

You can configure screens in screen windows that are dynamized via a tag or a script.
In this case, note when configuring the screen window:

- Dynamization via a script: A static value must always be configured for the "Screen" property of the screen window.
- Dynamization via a tag: Specify the screens to be displayed as conditions of the dynamization tag. Direct specification of the screen name in the dynamization tag is not possible.

Screen objects with "Release" event

You have configured a "Release" event for a screen object, e. g. for a button. If this button is pressed in runtime and, for example, a popup that covers the button opens or the position of the button changes due to zooming or scrolling, the function configured for the "Release" event is not executed. The behavior also occurs with a screen change.

Make sure that screen objects with a configured "Release" event are not impaired in their function during their operation in Runtime.

Configuration of the column width

You can configure maximum and minimum column widths in engineering in the properties of a control.

These settings are not supported in Runtime by the following controls:

- Alarm control
- Parameter set control
- Table view
- Value table

Upgrading the lowest device version of faceplate types

Upgrading the device version of faceplate types depends on the number of faceplate types to be converted and can take a very long time under certain circumstances. Do not interrupt the process.

Basics of tags: Composition of the number of tags

The number of tags used is displayed differently at different positions in WinCC.

Default tag table	• In the HMI device: All configured external, internal tags and the system tags. • In the PLC: All configured PLC tags and the system constants.
User-defined tag tables	• In the HMI device: All configured external and internal tags in the tag table. • In the PLC: All PLC tags configured in the tag table.

Compile	When compiling an HMI device, the following information about tags is provided in the Inspector window: • Number of tags: Addition of all configured, external and internal tags and their subelements from user data types or arrays. Example: Two external tags of a user data type with 5 elements and one internal tag of the type "array" with 10 elements: 2 + 2*5 + 1 + 1*10 = 23 • Tags used: The configured, external and internal tags or their elements that have a usage in the HMI device.
PowerTags	The number of PowerTags of an HMI device in "Properties > General > Information" results from the elements of the lowest level of all configured external tags in the HMI device. Example: Two external tags of a user data type with 5 elements: 2*5 = 10

Incorrect counting of tags

When using faceplates in Unified Panels (Basic and Comfort), tag arrays and tags based on User Data Types (UDT) are incorrectly counted as 1 tag.

HMI tags with user data type

When HMI tags whose data type is a user data type are exported, configured limits and start values are not exported.

Address multiplexing

Only numeric data types are allowed to be used for index tags for address multiplexing.

Data types of trigger tags for alarms

Trigger tags of alarms must have the following data types:

- Discrete alarms: "Byte", "Word", "DWord", "LWord" or array with "Byte", "Word", "DWord", "LWord"
- Analog alarms: "Int", "Real", "LReal", "SInt", "USInt", "UInt", "UDInt" and "ULInt"

Standard languages for system alarms

Texts of system alarms are available in the following languages by default:

- English (USA)
  German (Germany)
  Chinese (People's Republic of China)
  French (France)
  Italian (Italy)
  Spanish (Spain)

If you want to output system alarms in other languages, you can manually create texts in that language.

Alarm without inactive state without acknowledgment

An alarm with the state machine "Alarm without inactive state without acknowledgment" is only displayed in the "Show logged alarms" and "Show and update logged alarms" views.

The following predefined alarm classes use this state machine: "Information", "System information", "OperatorInputInformation".

Use of different types of databases for logging

The database types SQLite and Microsoft SQL are available for logging tags and alarms.

We recommend that you use Microsoft SQL for data logs under the following conditions:

- Number of tag value changes to be logged greater than 500 per second
- More than 1.3 billion log entries must be available (excluding deleted log segments in the backup)

The use of Microsoft SQL for alarm logs is recommended under the following conditions:

- Number of alarm states to be logged greater than 100 per second
- More than 26 million log entries must be available (excluding deleted log segments in the backup)

Scheduled tasks

No UI functions may be used in scripts or in referenced global modules in the Scheduler. When compiling, an error is still generated even if the scheduled task is already deleted.

"HMI Monitor Client" role

A user who is assigned the "HMI Monitor Client" role or the "Enable HMI Monitor Client" function right contained in the role cannot make any changes or write operations in the processes, regardless of other assigned roles and function rights.

Scripting

To correctly export logging data in CSV format in a script using the snippet "HMI Runtime > Tag logging > Export tag log as CSV", you must modify the line with the definition of the file name in the code of the snippet as follows:

```
let fileName = "C:\\Users\\Public\\TagLogFile.csv";
```

When closing popup windows, scripts executed in them are canceled. In some cases, asynchronous scripts may not be fully executed. Make sure that asynchronous functions are fully completed before the popup is closed.

Search and replace is possible for global scripts, but not for local scripts.

Data access on network drives via scripting

The remote access to files which are located on a network drive is for safety reasons not supported via runtime scripting.

Trend control: Compression of values for logging tags

The "AggregationMode" property specifies the type of compression of values for logging tags:

- TimeAverageStepped (1): Average across time in steps
- MinMax (2): Lowest and highest value from the defined period

Deactivation of the compression via the property is not possible.

Process diagnostics

If you add an "Info text" or one of the additional texts to the alarm texts, this source text must not be empty.

Performance features for SIMATIC Unified PC communication

SIMATIC NET is required to use more than 10 connections.

S7 routing

Unified devices cannot establish communication with S7-300 or S7-400 via S7 routing.

Reading and setting the operating mode of an S7-1200/1500 - Length of tag names

The procedure for handling long tag names has been adjusted.

If there are 2 tags with the same name and a length of 128 or more characters each, the name of the second tag is shortened so that he length of the name is 128 characters after the suffix (1) is appended.

Example:
`@ConnectionName_1234567890ConnectionName_1234567890ConnectionName_1234567890ConnectionName_123_PLC_OpStateC(1)`

Connections to Smart Clients

A maximum of 3 parallel connections to Smart Clients are supported.
Additional connections are not prevented, but lead to a reduction in performance.

Connections to 3rd-party PLCs

As of V18 Update 2, a maximum of 16 connections are supported for communication drivers of 3-party PLCs. This number can be a combination or 16 individual communication drivers.

The specification is only valid for Ethernet-based communication drivers and is additionally limited by the maximum possible number of connections at the respective PLC type.

Communication with LOGO! PLC

For the communication with a LOGO! PLC, select “Standard Modbus TCP/IP” in the connection as the communications driver.

Modbus RTU support

The communication driver "Modbus RTU" is only supported by Unified Comfort Panels. Using the communication driver with a Unified PC is not possible.

Unified Collaboration

Devices that are connected via Unified Collaboration must be time-synchronized.

Audit Viewer license

A basic license is required for the use of Audit Viewer.

Audit Trail - Format

Audit supports the following formats for logging:

File-based logging

File-based logging allows you to record up to 5000 logging tags in an SQL Lite database.

Database-based logging

Database-based logging allows you to record all logging tags up to the high limit in an MS SQL database.

System function "StopRuntime" in Audit Trail

The "StopRuntime" function is not supported by Audit and is not logged in the Audit Trail.

System function "CreateParameterSet"

The value of the parameter set "ParametersetName" of the system function "CreateParameterSet" does not contain any language ID and is written automatically under the English language ID.
Assign the name of the parameter set manually for other languages.

View of Things

In a VoT application, you cannot use asynchronous operations in scripts. The scripts run in VoT in a browser and are converted to an asynchronous version.

A VoT application cannot by compiled if the "Input finished" event is dynamized at an IO field.

"ErrorLog" worksheet in report templates

Report templates automatically include the "ErrorLog" worksheet.

Do not delete, rename or edit the worksheet. If required, you can hide the worksheet.

Recreating cross-references in case of faulty cross-reference list

If there are errors in the cross-reference list or if it is empty, you can manually recreate the cross-reference information under "Extras > Options > General > Cross-references".

Connecting Unified Comfort Panel with MS SQL or SQLite database

You can access MS SQL databases and SQLite databases via JavaScript functions from the Unified Comfort Panel.

- Microsoft SQL with the driver "ODBC Driver 17 for SQL Server"
- SQLite with the driver "SQLite3"

To create a connection to the database with the "CreateConnection" method, a "connectionString" parameter of the type "String" is transferred. The "connectionString" parameter has the form:

MS SQL	`let connectionstring = "DRIVER={ODBC Driver 17 for SQL Server}; DATABASE=UCP; UID=userid; PWD=password; trusted_connection=no; SERVER=ipaddress,port_number; TrustServerCertificate=yes";`
	Example:
	`let connectionstring = "DRIVER={ODBC Driver 17 for SQL Server}; DATABASE=UCP; UID=TestUser; PWD=test; trusted_connection=no; SERVER=192.168.0.115,1433; TrustServerCertificate=yes";`

SQLite	`let connectionstring = "Driver={SQLite3};Database=PathToDatabase; trusted_connection=yes;";`
	Example:
	`let connectionstring = "Driver={SQLite3};Database=/media/simatic/X51/MyUCP.db; trusted_connection=yes;";`

Time synchronization in the Unified Panel when upgrading

If you upgrade a V18, V18 Update 1 or V18 Update 2 project for which the time synchronization is activated via NTP server, an error message can appear during compiling due to an invalid update interval.

Click "Go to" and select a valid update interval.

Time zones in Controls and I/O fields

Please note that I/O fields have no setting possibility for the time zone. Values for the times are therefore always treated as UTC.

For most Controls you can configure the time zone according to the index values of the Microsoft time zones. By default, the value "-1" is set there, meaning the local time zone of the device.

Configure the time zone in the Control to avoid possible deviations from I/O fields.

Upgrading after restoring log segments

If you restore log segments for logging alarms or Audits on a Unified PC with Runtime V17, V18 or V19 installed and then upgrade the PC to V19 or V19 Update 2, Runtime can no longer access the entries from the restored segments after the upgrade.

To restore access, follow these steps:

1. Make sure the device is running the Audit service and the AlarmLogging service.
2. Open SIMATIC Runtime Manager on the device.
3. In SIMATIC Runtime Manager, delete all restored log segments.
   Proceed as described in the operating instructions of SIMATIC Runtime Manager.
4. To restore access to the segments restored before the upgrade, restore the log segments.
   Proceed as described in the operating instructions of SIMATIC Runtime Manager.

"Read" and "Write" methods for arrays

Only call the "Read" and "Write" methods at array elements.

Calling the methods at the higher-level array tag itself is not supported.

4.3 Important changes in behavior

Alarm control

As of V18 Update 1, alarm control supports multi-line alarm texts. Texts with line breaks are automatically converted into multi-line texts.

This also applies if you upgrade a project to V18 Update 1 that contains alarm texts with manually configured line breaks. As a result, texts may no longer nr displayed in full in the alarm control in runtime. In this case, adjust the row height in alarm control manually.

OPC UA with OpenSSL 3.0

As of V18 Update 3, OpenSSL 3.0 is used for WinCC Unified OPC UA.

If the OPC UA certificate of an HMI device was created before V18 Update 3, it becomes incompatible through the device upgrade. Recreate it. Follow these steps.

HMI device uses CA-based certificate

1. Upgrade the certificate authority device and the HMI device.
2. Recreate the OPC UA certificate of the HMI device on the certificate authority device with WinCC Unified Certificate Manager.
3. Install the certificate on the HMI device.
   If the communication partner already trusts the root certificate of the certificate authority, it automatically also trusts the newly created OPC UA certificate of the HMI device.

HMI device uses a self-signed certificate

1. Delete the certificate from the certificate store before upgrading the HMI device. Delete both the DER file and the PFX file.
   Proceed as follows:
   - The HMI device is a Unified PC:
     Delete the files from the following folder: `C:\ProgrammData\SCADAProjects\certstore`
   - The HMI device is a Unified Panel:
     Select "Control Panel > Security > Certificates" and as the "Certificate store" the entry "My Certificates".
     Select the certificate and delete it.
2. Upgrade the HMI device.
3. If the HMI device is a Unified PC:
   - Open the Windows command line in administrator mode.
   - Navigate to the following folder:
     `C:\Program Files\Siemens\Automation\WinCCUnified\bin`
   - Run the following commands:
     `OpcUaServerRTIL.exe -CreateCertificate`
     `OpcUaExporter.exe -CreateCertificate`
4. If the HMI device is a Unified Panel: Start Runtime.
   The certificate is automatically generated and installed.
5. Trust the certificate on the communication partners.

OPC UA Local Discovery Server

If the OPC UA Local Discovery Server Version 1.04.405.481 has been installed, the LDS will be removed when V18 Update 5 is installed for security reasons.

4.4 Addressing of screen objects in functions

In some functions, e.g. FindItem, SetPropertyValue and GetPropertyValue, the object path is used to address a screen object.

Addressing with absolute object paths

The object path of screen objects consists of the names of screen windows (ScreenWindows) and screen objects (ScreenItems). The names are connected according to their hierarchical arrangement using a slash ("/"). The object path ends with the screen object to be addressed. Screens (Screens) and their names are not used in the object path.

The absolute object path addresses a screen object starting from the screen window at the highest level (TopLevelScreenWindow). Note the following:

- A single slash "/" at the start of the object path addresses a top-level screen window whose name must follow, e.g. "/Main screen window".
- A top-level screen window generally has no name. By using a double slash "//", all screen objects of the screen in the top-level screen window can be addressed, e.g. "//Button_1".
- If a main screen window has been defined in the screen management, it becomes the top-level screen window and has a name. All references must include the name of the main screen window, e.g. "/Main screen window_1/Button_1". References with double slashes "//" no longer function and must be adapted.
- Alternatively, the tilde character "~" addresses the top-level screen window in the screen window's own screen hierarchy, e.g. "~/Button_1".
- Within a popup window (PopupScreenWindow), the popup window itself is the top-level screen window and is addressed with double slashes "//" or its own name, e.g. "/Popup window_1". Scripts within popup windows can address an unnamed top-level screen window outside the popup window only using `UI.Windows(0).Name`.

Examples of the use of absolute object paths

- Addressing using the screen window's own screen hierarchy:
  ```
  UI.SysFct.SetPropertyValue('~/Screen window_1/Screen window_2/
  Circle_1', "Visible", 0);
  ```
- Addressing using an unnamed top-level screen window:
  ```
  UI.SysFct.SetPropertyValue('//Screen window_1/Screen window_2/
  Circle_1', "Visible", 0);
  ```
  Please note that this notification cannot be used if a named top-level main screen window exists.
- Addressing using a main screen window of the screen management:
  ```
  UI.SysFct.SetPropertyValue('/Main screen window_1/Screen window_1/
  Screen window_2/Circle_1', "Visible", 0);
  ```
- Addressing using an unnamed top-level screen window from a popup window:
  ```
  UI.SysFct.SetPropertyValue('/' + UI.Windows(0).Name + '/Screen
  window_1/Screen window_2/Circle_1', "Visible", 0);
  ```

4.5 Improvements in Engineering and Runtime

4.5.1 Improvements in Update 5

This update contains the following improvements and changes:

Stability and performance

The stability and performance have been improved based on the feedback received and other factors.

Unified Comfort Panel: Start in Runtime

The start screen now loads faster when loaded initially.

4.5.2 Improvements in Update 4

This update contains the following improvements and changes:

Stability and performance

The stability and performance have been improved based on the feedback received and other factors.

Reports

- Report templates can be configured in such a way that the values of the data table of a segment are visualized in an Excel chart.
  The following chart types, including their subtypes, are now supported:
  - Column
  - Line
  - Pie
  - Bar
  - Area
  - XY (Scatter)
  - Radar
  - Treemap
  - Sunburst
  - Histogram
  - Box
  - Waterfall
  - Funnel

  The interaction of data table and chart has been improved. A configured chart now always evaluates the entire range of the data table in the generated report.
- Report generation performance has been improved. Reports with time series segments containing large data volumes are now generated more quickly.

- The formula of a user-defined column can now also contain references to multiple cells of the same column.
- The formatting for data source elements of the tag type has been corrected in single value segments. When you format a tag's cell as text in Excel, the value read from Runtime is now formatted as a string even if the variable has a numeric data type in Runtime.

Simulation

For simulations on panels, the flashing of objects in the process picture has been improved when the flash rate of the first object to flash is set to "None".

Documentation object model

- In the description of the object model the property "Duration" was added for the object "LoggedAlarmStateResult".
  The "Duration" property returns the duration of a logged alarm. The duration is defined as the time interval between activation of the alarm and the last change of the alarm state. The value of the property is specified in units of 100 nanoseconds.
- In the description of the object model the property "Properties" was inserted in the property "Tag" of the object "FaceplateType".
  The property "Properties" only has the property "Tag" (type "String"), which contains the name of the connected project tag. If you write the "Tag" property, the new value must contain the name of a tag with the same data type.

4.5.3 Improvements in Update 3

4.5.3.1 General improvements

This update contains the following improvements and changes:

Stability and performance

The stability and performance have been improved based on the feedback received and other factors.

Process diagnostics

The process diagnostics can be disabled or enabled in the Runtime settings via "Process diagnostics > General > Enable process diagnostics". The process diagnostics is disabled as default. If process diagnostics are deactivated, an error message appears when compiling if a ProDiag control is configured.

GRAPH overview

The functionality of the GRAPH overview has been extended.

ProDiag overview

The functionality of the ProDiag overview has been extended.

PLC code view

The functionality of the PLC code view has been extended.

If you select a symbol in a LAD network or FBD network, you see information on this symbol in the symbol line.

Criteria analysis

The display of the criteria analysis for ProDiag alarm or GRAPH alarm has been improved.

In the GRAPH overview, the first faulty operand of the criteria analysis is displayed.

When changing from the alarm control or the GRAPH overview to the PLC code view, the first faulty operand is highlighted if a ProDiag alarm or GRAPH alarm is selected.

OpenFaceplateInPopup

The following optional parameters have been added to the "OpenFaceplateInPopup" method:

Parameter	Description
popupWindowName	Name of the popup window. Note that the name must be unique in the project. If the parameter is omitted, a unique name is generated automatically.
adaptWindow	If `true`, the size of the popup window is automatically matched to the size of the faceplate and cannot be defined by the "width" and "height" parameters. The default value is `true`.
left	Left coordinate of the position of the popup window. The default value is 10.
top	Upper coordinate of the position of the popup window. The default value is 10.
width	Width of the popup window. Is used if the "adaptWindow" parameter is `false`. The default value is 100.
height	Height of the popup window. Is used if the "adaptWindow" parameter is `false`. The default value is 100.

By using the new parameters, faceplates are shown in the correct size in popup windows.

Since the parameters are optional, this has no effect on existing scripts.

4.5.3.2 Discrete alarms

Sending an alarm acknowledgment to the PLC

Requirement

- The "HMI alarms" editor is open.
- The desired alarm is created and assigned to an alarm class with mandatory acknowledgement.

Procedure

To configure the acknowledgment of an alarm to be sent to the PLC, follow these steps:

1. In the "HMI alarms" editor, click the "Discrete alarms" tab and select the desired discrete alarm.
2. In the Inspector window, select "Properties > Properties > Acknowledgment".
3. Under "Status tag", select the tag and the bit set by the alarm acknowledgment function.
   The selection of the tags depends on your configuration in the "HMI tags" editor and the fact whether the alarm is acknowledged is stored in these tags.
   Supported data types for the status tag: Word, DWord, LWord, Byte.

Note

The HMI device and PLC only have read access to the status tag memory area.

Note

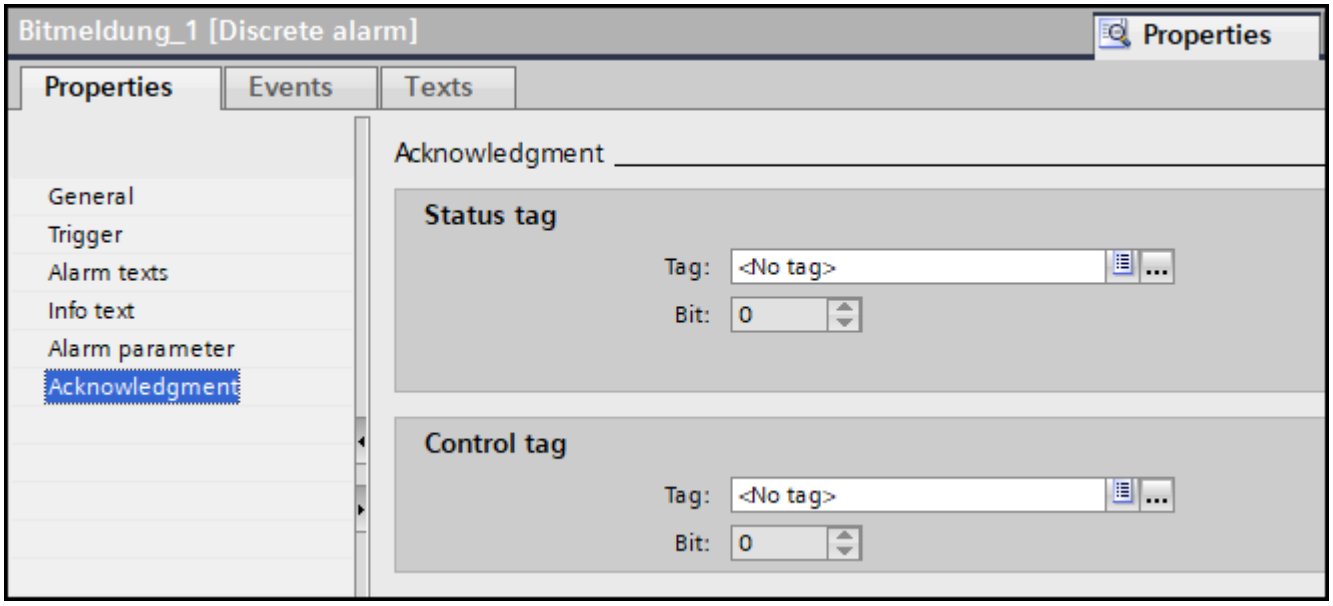
The normal status of the bit is 1.

When the alarm is in the "active" state, the bit changes from 1 to 0.

When you acknowledge the alarm, the bit changes from 0 to 1.

To configure that the alarm is acknowledged by the PLC, follow these steps:

1. In the "HMI alarms" editor, click the "Discrete alarms" tab and select the desired discrete alarm.
2. In the Inspector window, select "Properties > Properties > Acknowledgment".
3. Under "Control tag", select the tag and the bit set by the alarm acknowledgment function.
4. The tag can be any tag, there are no restrictions.
   Supported data types for the control tag: Word, DWord, LWord, Byte.



Result

If the operator acknowledges the alarm in Runtime, the operating step is forwarded to the PLC.

4.5.3.3 Initial value acquisition and criteria analysis

Overview of initial value acquisition and criteria analysis

Introduction

In the TIA Portal you have the option of testing the execution of your user program on the HMI device. The data and values on the HMI device are continuously synchronized with the PLC and updated. You therefore see the current program status with the actual values of the signal states on the HMI device.

If an error occurs in your plant, you have the option of jumping to the program code from the corresponding error message and displaying the error location in the network in the “PLC code view". In the "Criteria analysis view" object, you see the faulty operands for a selected GRAPH alarm or ProDiag alarm at a glance.

The initial value acquisition and criteria analysis functions enable you to record the values at the time of the error and to quickly identify the faulty operands in the program.

The actual value acquisition and criteria analysis functions are available for GRAPH function blocks, ProDiag function blocks and safety programs (F-blocks).

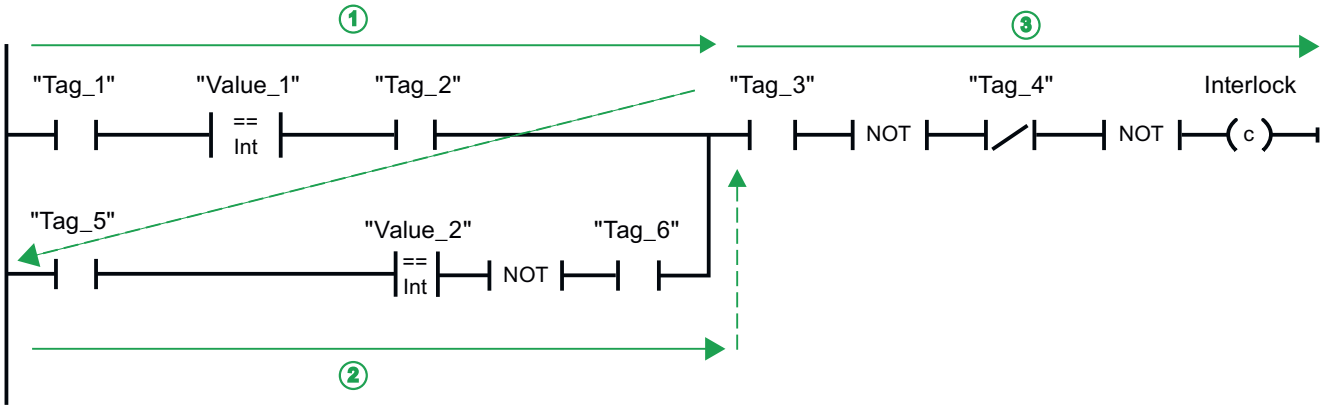
Requirement

- The initial value acquisition is available in WinCC Unified Runtime for the following blocks:
  - For the GRAPH function blocks as of version 6.0.
  - For the ProDiag function blocks as of version 2.0.
- Maximum of 32 statuses can be recorded. The initial values for a network that contains more than 32 elements are not recorded.

Initial value acquisition

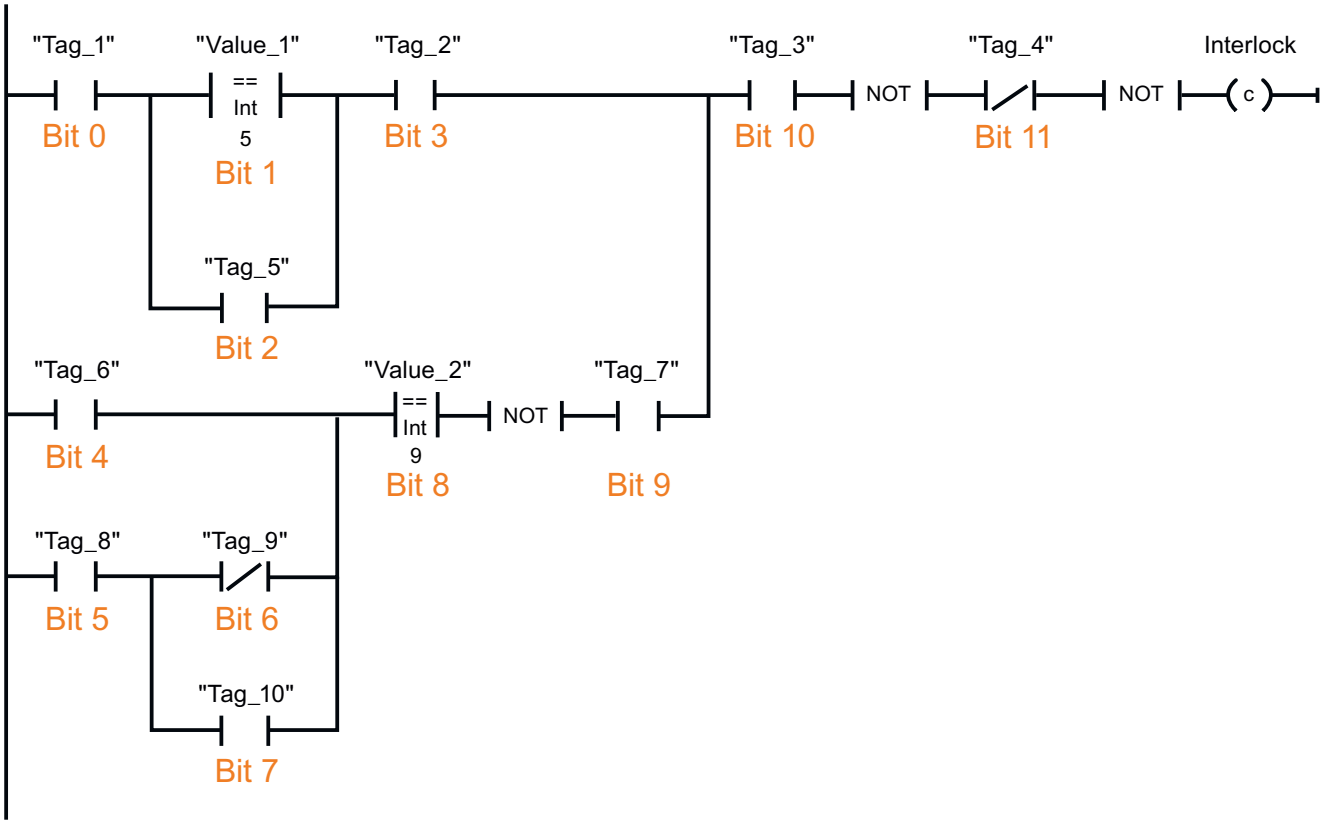
With the help of initial value acquisition you can acquire the values at the time of the error in the PLC, display them in the PLC code view and compare them with the actual values. With initial value acquisition you continuously record the signal states of Boolean operands and results of comparators in transitions and interlocks.

The signal states are recorded in a defined order from top left to bottom right:



You activate initial value acquisition individually for each GRAPH block in the user program. A maximum of 32 signal states of Boolean operands can be recorded per interlock or per transition of a GRAPH step. Each individual signal state occupies one bit. The values are saved in a DWORD.

In the following example you can see the principle and order in which the initial values are recorded in the interlock:



Criteria analysis

Initial value acquisition in the PLC enables the analysis of criteria and operands with error in the program. You see the evaluation of the criteria analysis on your HMI in the PLC code view. In addition, in the "Criteria analysis view" object, you can use the criteria analysis to have the faulty operands displayed for a selected GRAPH alarm or ProDiag alarm.

Note

If the upstream network has been changed, the alarm is not be triggered again. This leads to inconsistencies between the network and faulty operands. As a result, the criteria analysis view cannot correctly display the faulty operands. If the alarm is triggered again, the faulty operands are displayed correctly again in the criteria analysis view.

For the blocks for which you have activated initial value acquisition, after the jump the initial value view is displayed by default in the PLC code view. In addition, the operands with error and criteria are highlighted visually in the initial value view.

All information about the selected operand can be seen in one line of the PLC code view.

In the event of an error in a comparator, both operands are marked as having errors. Only the recorded values are shown in the initial value view. To see the actual values of the tags, change to the actual value view.

Supported instructions

Introduction

You see the initial values and the results of the criteria analysis in the "PLC code view" object.

For global supervisions, the initial values of all Boolean operands in the network are recorded. If the network contains multiple individual power rails that are not connected to each other, only the initial values of the respective power rail are recorded.

For local supervisions, only the initial values that are specified as conditions for the supervised parameter for the block call are recorded.

Supported instructions

The following instructions are supported in LAD and FBD for initial value acquisition:

Instructions	Display on the HMI device
Bit logic operations	
Normally open contact	Initial values and criteria analysis
Normally closed contact	
Invert RLO	The instruction is supported but it is not relevant for initial values or the criteria analysis.
Assignment	
Negate assignment	
Reset output	Initial values
Set output	
Set/reset flip-flop	Initial values and criteria analysis up to and including the instruction box
Reset/set flip-flop	
Comparator operations	
Equal	Initial values and criteria analysis
Not equal	
Greater or equal	
Less or equal	
Greater than	
Less than	
Timers	
TP	Initial values and criteria analysis up to and including the instruction box
TON	Initial values and criteria analysis
TOF	Initial values and criteria analysis up to and including the instruction box
TONR	
Counters	
CTU	Initial values and criteria analysis up to and including the instruction box
CTD	
CTUD	

For bit logic operations, the status of the operand is recorded. For comparators, the result of the comparison is recorded.

For flip-flops, both inputs (R and S) are recorded if they are interconnected.

For timers and counters, the status of the operand at the output, and the inputs if they are interconnected, are recorded. (For example, for CTUD: CU, CD, R, LD)

The FBD instructions AND and OR are also supported for initial value acquisition and criteria analysis. The FBD instruction EXCLUSIVE OR is not supported by the initial value acquisition and criteria analysis.

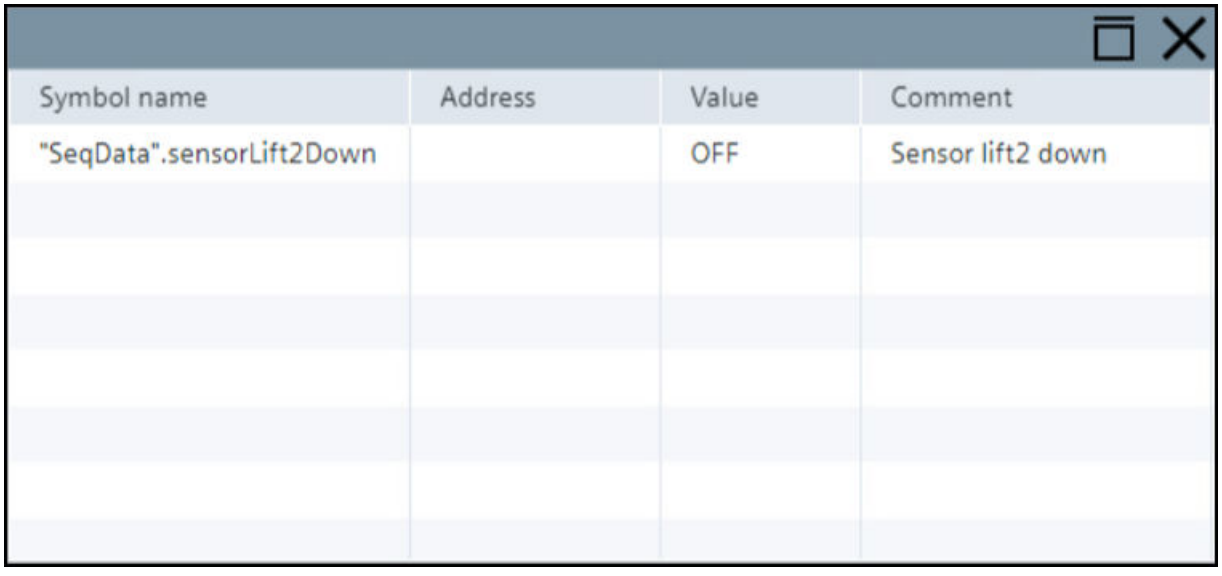
Criteria analysis view (RT Professional, RT Advanced, Panels, Comfort Panels)

Use

The "Criteria analysis view" object shows you the faulty operands in the user program that have triggered a selected ProDiag alarm or GRAPH alarm. As a result, you have the option of seeing the list of faulty operands in addition to the alarm in the same screen.

To see the evaluation of the criteria analysis in the "Criteria analysis view" object in Runtime, select the initial value acquisition in the settings of the function blocks in the user program. The initial value acquisition is available for GRAPH function blocks as of version 6.0 and ProDiag function blocks as of version 2.0.

To enable the link to the corresponding error message, configure a reference to a previously configured alarm control. If you select a GRAPH alarm or a ProDiag alarm in the alarm control in Runtime, then the name, address, comment and value of the operand that caused this error is displayed in the criteria analysis view.



You see the incoming alarms and the operands with errors at a glance in runtime if you configure the criteria analysis control and its linked alarm control in the same screen.

Note

Criteria analysis is only available for the user programs for which initial value acquisition has been activated.

Activate initial value acquisition in the properties of the following blocks:

- ProDiag function blocks with version greater than or equal to V2.0
- GRAPH function blocks with version greater than or equal to 6.0

Layout

You change the settings for the position, style, colors, and fonts of the object in the Inspector window.

Columns

The following columns are displayed in the criteria analysis view in Runtime.

Column	Description
Symbol name	Symbolic name of the operand in the user program.
Address	Absolute address of the operand. The specification of the absolute address is only possible for operands that are listed in the PLC tag table.
Value	The value of the operand at the time of the error.
Comment	Additional comments from the user program in the language that is loaded into the controller.

Configuring the criteria analysis view (RT Advanced, Panels, Comfort Panels)

"Criteria analysis view" object

The "Criteria analysis view" object shows you the faulty operands in the user program that have triggered a selected ProDiag alarm or GRAPH alarm. It is used to list the initial values in a separate view in order to obtain an overview of the fault status of the plant.

If you select the incoming ProDiag alarm or GRAPH alarm in the alarm control in Runtime, you see the operands that were determined in the criteria analysis view.

You configure the criteria analysis view and its linked alarm control in the same screen.

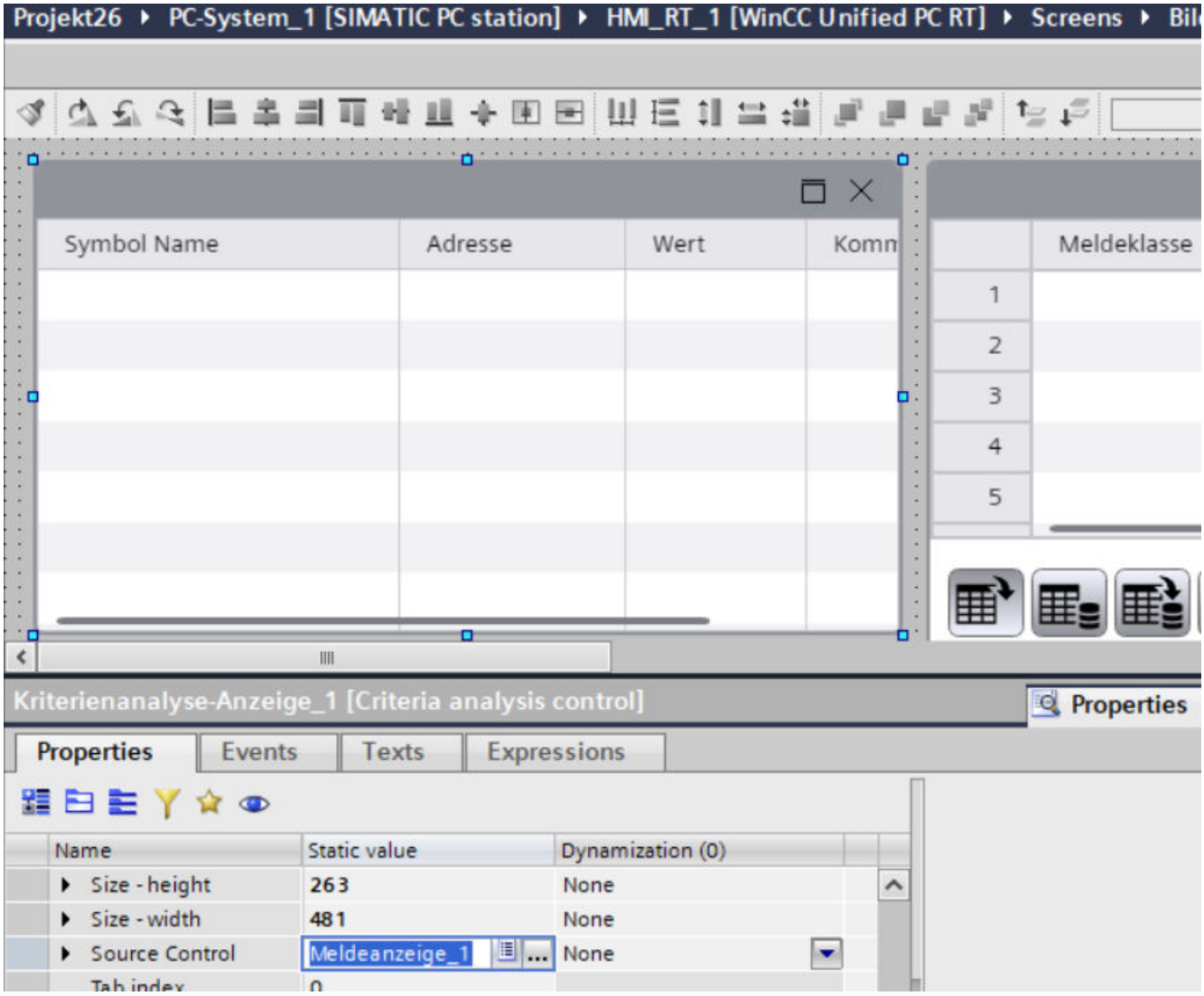
Requirement

- The HMI device is connected to the controller.
- A ProDiag program version 2.0 or a GRAPH program Version 6.0 or higher is installed on the controller.

- Process diagnostics is enabled in the "Runtime settings > Process diagnostics > General" of the Unified Runtime device.
- Initial value acquisition is enabled for the function blocks.
- An alarm control has been configured.

Procedure

1. Move the criteria analysis view from the toolbox window using drag-and-drop.
2. Click on "Properties > Properties" in the Inspector window.
3. Open the selection button under the "Data source" property.
4. Select the configured alarm control.



Result

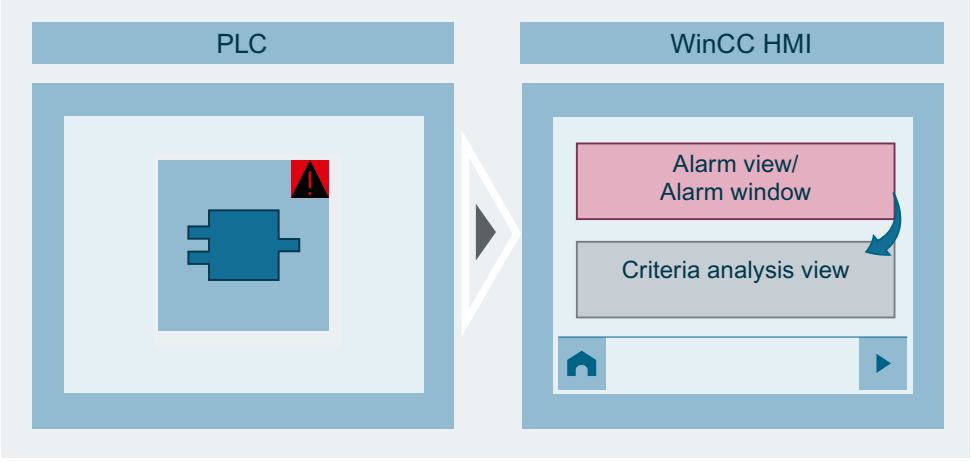
The criteria analysis view is configured in the screen and connected to the alarm control. For a selected alarm you can see detailed information in Runtime about that operands that triggered this alarm.

Outputting alarms with criteria

Introduction

When initial value acquisition is activated, the values of the operands with errors are acquired at the time of the error and missing criteria are analyzed and determined on the HMI device.

You have the option to add additional information about faulty operands to the GRAPH and ProDiag alarms and output them on your HMI device. If an error occurs in the program flow in runtime, the error message also shows the operands with errors in the affected network. You see detailed information on all operands with error of the error message in the "Criteria analysis view" object.



In WinCC Unified Runtime, you have the option to add additional information to the alarms. For this, select the appropriate text that you want to extend under "Runtime settings > Process diagnostics > Criteria analysis > Extend text", i.e. alarm text, info text or additional text 1 - 9. You can extend the texts with the first faulty operand or with all faulty operands.

The following information can be added to the operands:

- Symbol: The symbolic name of the first or all faulty operands.
- Absolute address: The address of the first or all faulty operands.
- Value: The value of the first or all faulty operands at the time of the fault.
- Comment: Multilingual comments that were configured in the user program.

The additional information is separated in the alarm by semicolons and spaces.

Note

The order of the additional information that is added to the alarm is predefined and cannot be changed.

Note

To completely display the alarms from the controller on the HMI device, the "Automatic update" option must be selected under "Runtime settings > Alarms > Controller alarms" for the relevant connection. You can find additional information on complete alarms under "Sending a complete alarm from the controller to the HMI device".

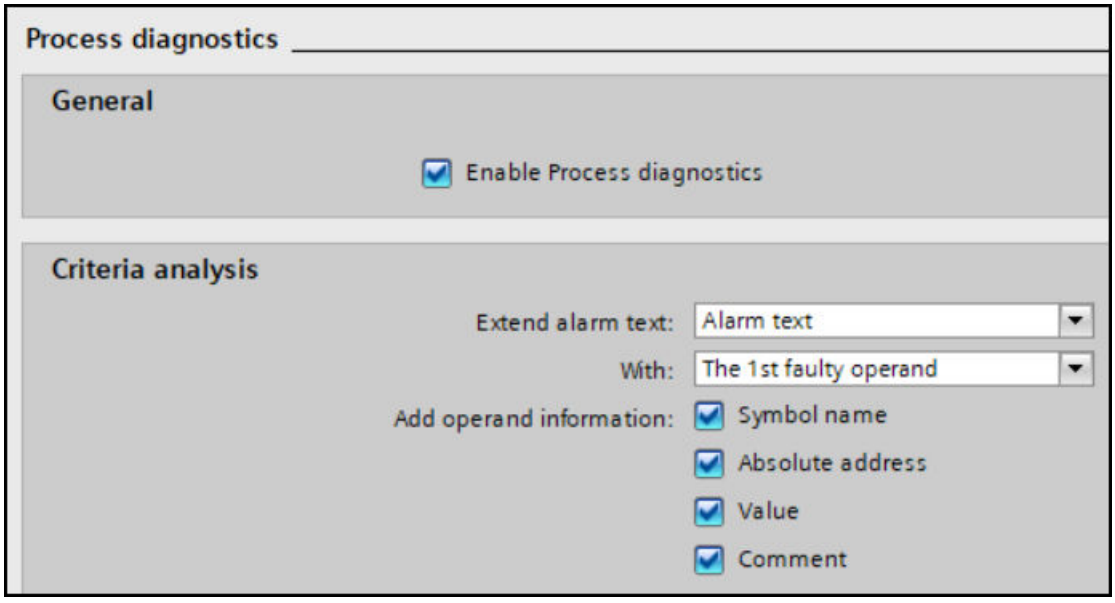
Criteria analysis in the alarm system

You visualize the alarms for the criteria analysis in the following steps:

- You enable the initial value acquisition in the properties of the ProDiag function block or GRAPH function block of the user program
- You enable the options to extend the alarm texts or info texts in the runtime settings of the HMI device

Extend alarms

1. Open the "Runtime settings" editor of the HMI device.
2. Click "Process diagnostics > Criteria analysis".
3. Under "Criteria analysis > Extend text", select which texts you want to extend.
4. Select the additional information to be added to the alarm text in the alarm, such as symbol name, address and value of the first faulty operand and comment.



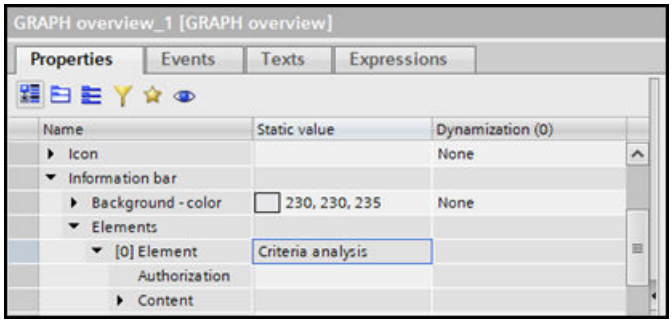
Result

If an error occurs, you see not only the alarm text in the alarm control but also the operands that triggered the error message.

Criteria analysis in the "GRAPH overview" object (RT Advanced, Panels, Comfort Panels)

Extension of the "GRAPH overview" object with the criteria analysis

To display the criteria analysis in the "GRAPH overview" object, the criteria analysis must be enabled in the Inspector window under "Properties > Properties > Information bar > Elements".



Result

In runtime, the information bar of the "GRAPH overview" object displays the symbolic name of the 1st faulty operand.

4.5.4 Improvements in Update 2

4.5.4.1 General improvements

This update contains the following improvements and changes:

Stability and performance

The stability and performance have been improved based on the feedback received and other factors.

Compilation after library update

Projects can also be compiled after a library has been upgraded.

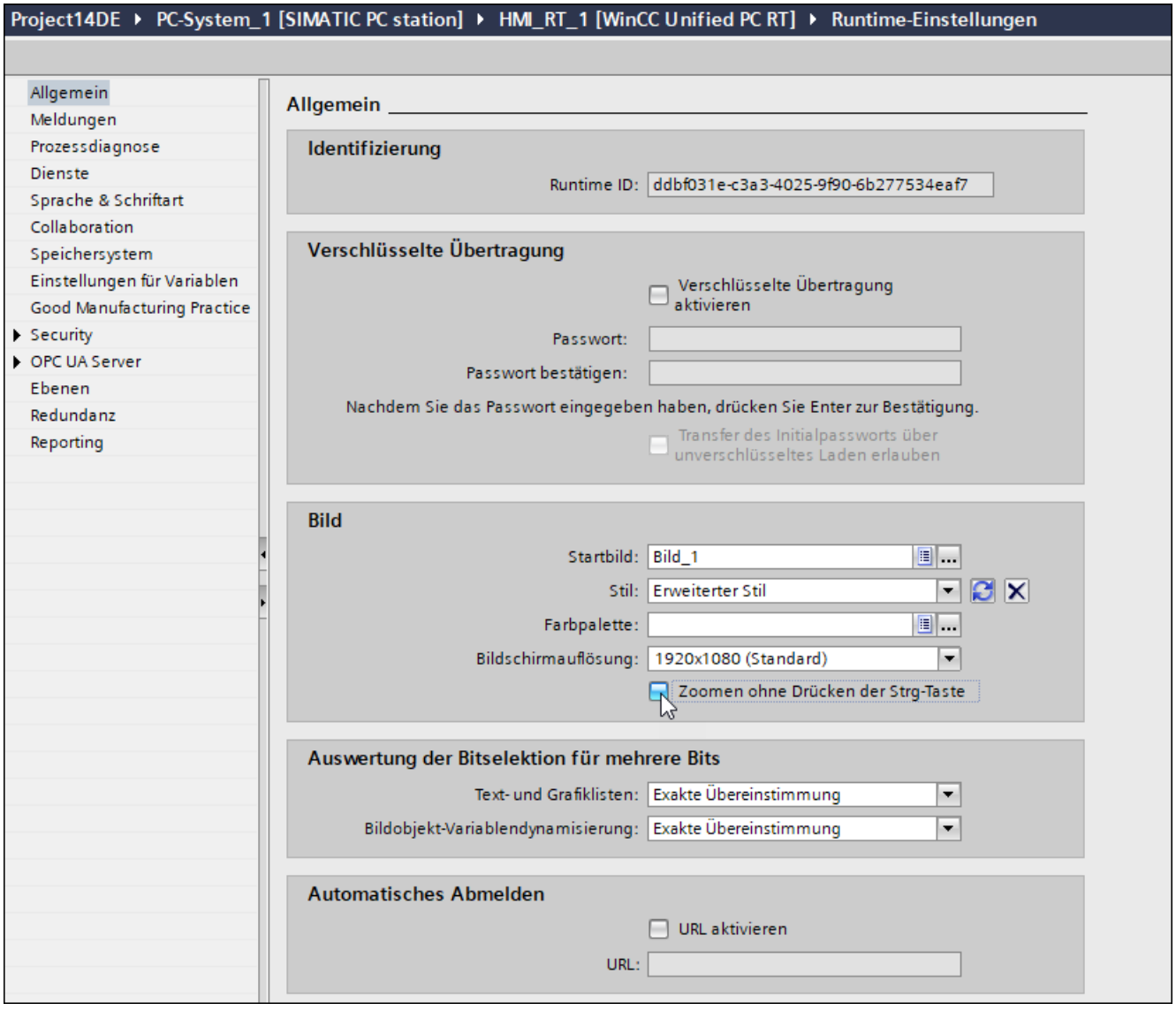
Zooming without pressing the control button

You can configure zooming in runtime in the runtime settings of the device. You have the following options:

- Zooming by turning the mouse wheel with pressing the control button.
- Zooming by turning the mouse wheel without pressing the control button.

To zoom in runtime without pressing the control button, follow these steps:

1. Under "Runtime settings > General > Screen", activate the option "Zoom without pressing the control button".
   This option is disabled by default.



Symbolic I/O field

The display of symbolic I/O fields with "Input/output" mode has been improved in engineering and Runtime.

Scripting

Arrays with tags of the WString data type can be used within user-defined functions.

Reading and setting the operating state of an S7-1200/1500

The operating state of an S7-1200/1500 PLC can be read and set via system variables.

- `@ConnectionName_PLC_OpState` reads the state of the PLC.
- `@ConnectionName_PLC_OpStateCtrl` sets the state of the PLC.

The tags are available if a connection to a PLC of the type S7-1200/1500 is configured.

The tags are available as of version 18.0.0.2. If the version of a device is changed to an older version, these tags are no longer available.

If the connection is removed or the connection type is changed, the tags are removed.

This functionality replaces the system functions "SetPlcMode" and "GetPlcMode".

4.5.4.2 System functions

System functions for the jog mode of tags

The new JavaScript object "`Tags.Inching`" contains the functions:

- "`Tags.Inching.SysFct.ReadAndDecreaseTag()`"
- "`Tags.Inching.SysFct.ReadAndIncreaseTag()`"
- "`Tags.Inching.SysFct.ReadAndInvertBitInTag()`"
- "`Tags.Inching.SysFct.ReadAndSetBitInTag()`"
- "`Tags.Inching.SysFct.ReadAndResetBitInTag()`"
- "`Tags.Inching.SysFct.ReadAndSetTagValue()`"

The system functions "ReadAndDecreaseTag", "ReadAndIncreaseTag", "ReadAndInvertBitInTag", "ReadAndSetBitInTag", "ReadAndResetBitInTag" and "ReadAndSetTagValue" are available in the function list.

The functions differ from "DecreaseTag", "IncreaseTag", "InvertBitInTag", "SetBitInTag", "ResetBitInTag", and "SetTagValue" in the following ways:

- The HMI device updates the value of the HMI tag with the value from the PLC before the write operation occurs.
- After the write operation, the value of the HMI tag is updated immediately, e.g. in an IO field.

The new functions are slower due to the updating of the tag at the beginning and end of jog mode. It is recommended that you use the new features only when they need to perform time-critical tasks.

"ActivateCleanScreen" system function

The "`UI.SysFct.ActivateCleanScreen()`" function opens a screen as a pop-up in full-screen mode and disables the touch screen of the Unified Panels. While the clean screen is open, no screen object of the underlying screen can be used. The pop-up is closed after the configured time interval has elapsed.

The "ActivateCleanScreen" system function is available in the function list.

System function "SetPLCDateTime"

The "`HMIRuntime.Connections.SysFct.SetPLCDateTime()`" function sets the date and time of the HMI device in the connected PLC. Note that this function can only be configured for SIMATIC S7-1200/1500.

The "SetPLCDateTime" system function is available in the function list.

"OpenPLCCodeViewByAlarm" system function

When an alarm is selected in the alarm view, the "`UI.ProDiag.SysFct.OpenPlcCodeViewFromAlarm()`" function opens the corresponding block in the PLC code view.

The "OpenPLCCodeViewByAlarm" system function is available in the function list.

"OpenScreenInPopupAsync" system function

The "`UI.SysFct.OpenScreenInPopupAsync()`" function opens a screen asynchronously in a popup window. This also makes it possible to initialize the PLC code viewer in a popup window and use it from a GRAPH overview.

The "OpenScreenInPopupAsync" system function is available in the function list.

System functions "CreateSystemMessage", "CreateOperatorInputInformation" and "CreateSystemInformation"

The integration of parameter values in system alarm texts has been improved for the system functions "CreateSystemMessage", "CreateOperatorInputInformation" and "CreateSystemInformation".

4.5.5 Improvements in Update 1

4.5.5.1 General improvements

This update contains the following improvements and changes:

Stability and performance

The stability and performance have been improved based on the feedback received and other factors.

Segment-based backup for SQLite

Segment-based backup is supported as of V18 Update 1 for all archive types of the HMI devices Unified PC and Unified Comfort Panel.

The following requirement must be met:

- The "SQLite" database type must be enabled for the HMI device.

To use segment-based backup for SQLite, follow these steps:

1. Under "Archives", create one of the following archives:
   – Data log
   – Alarm log
   – Audit Trail
2. Under "Backup mode", select the "Path" option and specify a path for the backup.
   For Unified Comfort Panel, the fully qualified mountpoint path is required.
   Example: To use the "MyBackup" directory, specify the path "/media/simatic/data-storage-1/MyBackup". The mountpoint name is "data-stoarge-1".
   A network folder can be configured using the mountpoint name specified in the Control Panel.

Parameter sets and parameter set control

The following improvements have been made for parameter sets and the parameter set control with V18 Update 1:

- Parameter sets can be created in the parameter set control, even if the parameter set type elements consist of multiple levels.
- If you transfer new parameter sets into the parameter set control with the "Read from PLC" button, the parameter sets are then displayed as selected in the selection menu.

4.5.5.2 System functions and scripts

This update contains improvements for:

- System functions

System function for opening the login dialog

The new "`HMIRuntime.UI.UserManagement.SysFct.ShowLoginDialog()`" system function is installed with the update. The "ShowLogOnDialog" function is available in the function list. With the system function, you open a login dialog for entering user name and password without leaving the currently displayed screen.

Only local user management supports the "ShowLogOn Dialog" system function.

System function for external control of the system diagnostics control

The new "`UI.SysDiag.ExecuteToolbarButton()`" system function is installed with the update. The "ExecuteToolbarButton" function (system diagnostics control) is available in the function list. The system function is used to control the buttons of the toolbar in the system diagnostics control.

System function for external control of the parameter set control.

The new "`UI.ParameterControl.SysFct.ExecuteToolbarButton()`" system function is installed with the update. The "ExecuteToolbarButton" function (parameter set control) is available in the function list. The system function is used to control the buttons of the toolbar in the parameter set control.

System function for external control of the alarm control

The new "`UI.Alarm.SysFct.ExecuteToolbarButton()`" system function is installed with the update. The "ExecuteToolbarButton" function (alarm control) is available in the function list. The system function is used to control the "Single acknowledgment" and "Group acknowledgment" buttons of the toolbar in the alarm control.

Extension of the "InsertElectronicRecord" system function

The "`HMIRuntime.Audit.SysFct.InsertElectronicRecord()`" system function is extended with the update. The "InsertElectronicRecord" function is available in the function list.

The "Confirmation type" parameter, which specifies how the action must be confirmed, has been extended:

- 0 = (None): No confirmation required, an entry is created in the Audit Trail.
- 1 = (Acknowledgement): Acknowledgment, the user must acknowledge the action; an entry is created in the Audit Trail.
- 2 = (Acknowledgement + Comment): Acknowledgment, the user must acknowledge the action and enter a comment; an entry is created in the Audit Trail.
- 4 = (Digital Signature): Electronic signature; a dialog window opens in which the user must enter the electronic signature; an entry is created in the Audit Trail.
- 6 = (Digital Signature + Comment): Electronic signature; a dialog window opens in which the user must enter the electronic signature and a comment; an entry is created in the Audit Trail.

The "Required function rights (optional)" parameter has been added. If the confirmation type requires an electronic signature, the function right required for the electronic signature must be specified:

- 0 = No function right required.
- 1 = The "First electronic signature" function right is required.
- 2 = The "Second electronic signature" function right is required.
- 3 = The "First electronic signature" and "Second electronic signature" function rights are required.

ActiveScreen property

The "ActiveScreen" property now always returns the screen that has the input focus. If the I/O field in a screen window or a faceplate has the input focus, ActiveScreen thus returns the screen that is displayed in the screen window or faceplate respectively. If you used ActiveScreen to edit the coordinates in the "OpenFaceplateInPopup" script function, for example, this may result in the popup being opened at a different location than it was in previous versions.

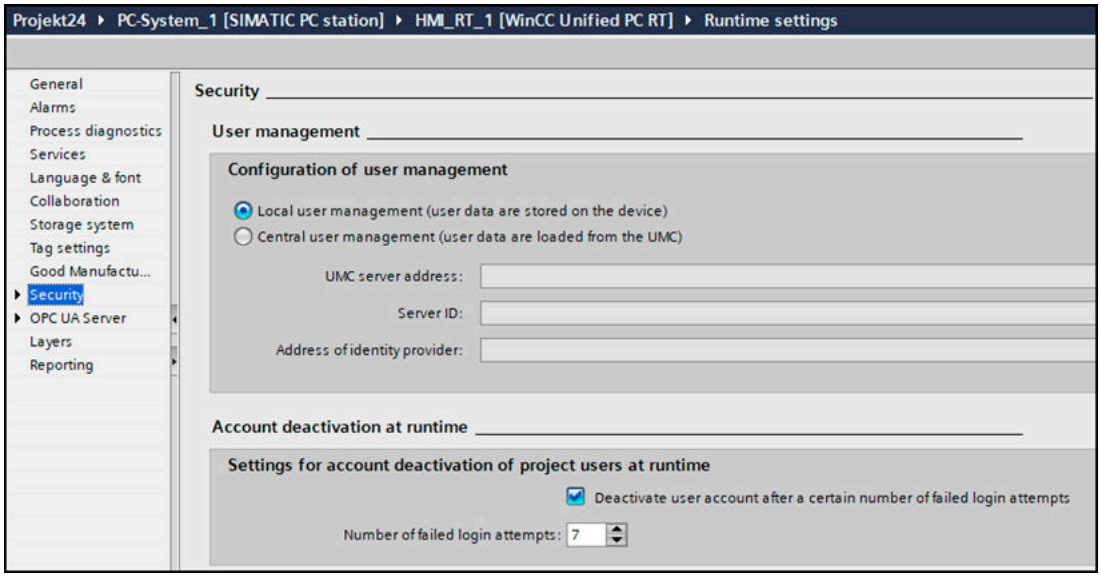
4.5.5.3 User management

This update contains improvements for:

- Incorrect login attempts

Incorrect login attempts

In the runtime settings, you can specify whether and after how many failed login attempts a user is blocked.



4.5.5.4 Diagnostics

This update contains improvements for:

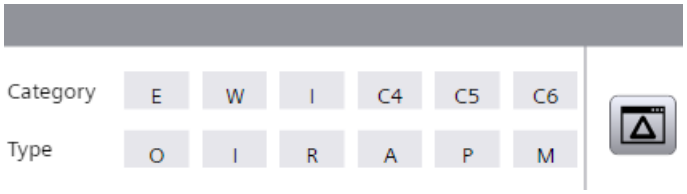
- Process diagnostics
- System diagnostics

Process diagnostics

The stability of process diagnostics objects has been improved.

ProDiag overview

The "ProDiag overview" object provides an overview of the current status of the configured monitoring in Runtime. When an error occurs, the type of error and the error category are determined in the ProDiag overview. You can navigate directly to the alarm control to find the error and you can jump from the corresponding alarm to the PLC code viewer control. You can display the affected program code in the PLC code viewer control.



In the Inspector window, you customize the position, geometry, style, color and font types of the object. You can adjust the following properties in particular:

- Displayed buttons
- Names and colors for categories
- Names and colors for supervision types

You can display a maximum of 8 categories and 6 supervision types in the "ProDiag overview" object. The following pre-defined categories and supervision types are available:

Categories

Name	Categories
E (Error)	Error
W (Warning)	Warning
I (Info)	Information
C4 ... C8	Additional categories

Supervision types

Name	Supervision types
O (Operand)	Operand error
I (Interlock)	Interlock error
R (Reaction)	Reaction error
A (Action)	Action error
P (Position)	Position error
M (Message error)	Alarm

"Jump to Alarm Control" button

The "Jump to Alarm Control" button in the ProDiag overview is activated by default.

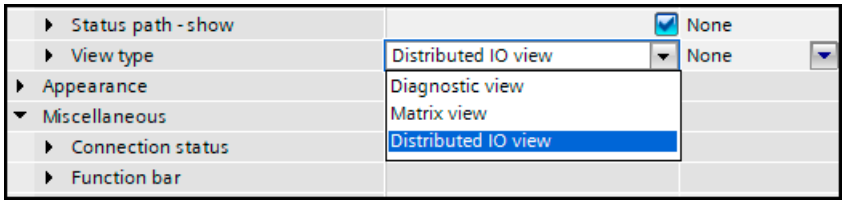
Button	Name	Function
	Jump to Alarm Control	Opens the configured alarm control with the error message after the button has been assigned system functions or scripts.

PLC code view

The "PLC code display" object is used to display the current program status of user programs that have been programmed in the graphical programming languages LAD and FBD as well as GRAPH.

System diagnostics control

The view type for the system diagnostics control object has been extended by the "Distributed IO view".



The "Distributed IO view" shows the distributed devices of the Profinet IO system.

The requirement is that only one PLC is configured with a Profinet IO system. Otherwise, Runtime switches back to the matrix view.

The "Home" button allows you to switch from the distributed IO view to the diagnostics overview. You can also jump to the diagnostics buffer from the distributed IO view.

If the Profinet IO system cannot be accessed, the diagnostics overview is displayed.

If you change the device version from 18.00.01.01 to 18.00.01.00, the matrix view is displayed and the distributed IO view is not visible in the selection field.

4.5.5.5 Communication

This update contains improvements for:

- Process communication
- OPC UA communication

SIMATIC S7-1500 Software Controller V30.0

Version V30.0 of the SIMATIC S7-1500 Software Controller is introduced with the update.

- Create a direct, integrated connection between a Software Controller and the HMI Runtime of a WinCC Unified PC by dragging and dropping a Unified PC on to Software Controller in the "Devices & Networks" editor.
- Configure the PC/PC interface in Microsoft Windows by assigning the S7ONLINE access point to the RT-VMM virtual network adapter.
- In the "Devices & Networks" editor you create connections to other PLCs, direct or routed.
  You use the S7ONLINE access point to create a direct connection between the HMI Runtime and an external PLC.
  You use the VMM Adapter access point to create a connection between the HMI Runtime and an external PLC via the Software Controller.
  Depending on the number of interfaces on the Software Controller, you can configure several of these connections in different subnets.
- Configure a connection between an HMI Runtime and a Software Controller if both devices are created on different PCs.
  To do this, assign the VMM Adapter access point to the HMI Runtime.

OPC UA

Unified OPC UA clients can now address OPC UA server tags with an address of up to 256 characters.

Application example: Addressing elements of a nested UDT.

4.6 Unified Engineering

4.6.1 Improvements in Update 5

This update contains the following improvements and changes:

Stability and performance

The stability and performance have been improved based on the feedback received and other factors.

4.6.2 Improvements in Update 4

This update contains the following improvements and changes:

Stability and performance

The stability and performance have been improved based on the feedback received and other factors.

Faceplates

The system functions of the category "Tag > Jog mode" are only available for faceplates as of the lowest device version 18.0.0.2.

System functions for jog mode:

- ReadAndIncreaseTag
- ReadAndInvertBitInTag
- ReadAndResetBitInTag
- ReadAndSetBitInTag
- ReadAndSetTagValue
- ReadAndDecreaseTag

When using with a lowest device version or lowest Runtime version, an error is output during compiling and loading.

Tags in the global search

After deleting a tag which is used in a dynamization the tag name therefore remains available in the dynamization and is highlighted in red. The tag is found in the global search and can be replaced.

Dynamic SVG graphics and own Controls

Dynamic SVG graphics are displayed correctly when copying a project to another device and displayed in Runtime.

Dynamic SVG graphics and My controls are displayed correctly in the screen after updating.

Logging

The logging mode of log tags "On change" functions flawlessly.

Indirect assignment of the address when multiplexing

When multiplexing via an array the indirect assignment of the address (DBNumber, Address) via a tag functions flawlessly.

Edit tag of parameter set types

Initial situation: You have configured a PLC user data type (UDT) which contains an element of the data type "String" and an HMI user data type which contains an element of the data type "WString" with a defined length.

If you configure a parameter set type which uses the PLC UDT as the data type and the HMI UDT as an editing tag, no error is displayed anymore if the string lengths match.

References in global definitions

The scripting of global references has been improved. References remain during copying, inserting and moving of code.

Characters of the font "Siemens TIA Portal Icons"

Entry of the ASCII characters of the font "Siemens TIA Portal Icons" via the keycode functions correctly.

Global search: Creation of the search index

The creation of the search index for the global search in the project functions flawlessly.

Compiling and loading changes

The compiling and loading of changes has been improved.

Alarm control

Renaming the column name in the right part of the Inspector window in the column "Column header - Text" functions correctly.

Sorting alarms:

When sorting discrete alarms according to the "Trigger tag" column, the results are displayed correctly in alphabetical order.

Error in the synchronization of IDs when downloading projects

Synchronization of IDs has been improved to prevent erroneous ID conflicts when the project is downloaded. If an existing project has already been affected by this error, perform the following steps:

1. Download the complete project.
   The project download fails. The ID database is updated.
2. Compile the project.
3. Download the complete project again and select the option "Do not synchronize" under "Synchronize IDs".
   The project is downloaded completely. The IDs with errors are overwritten.

When you have performed these steps, you can download your project after the next change as usual and select any option for synchronization of the IDs.

TIA Portal Openness

The automatic creation of screen objects with the Excel importer has been improved. The "Authorization" object property is imported and assigned correctly.

The feedback for using non-allowed characters when renaming a faceplate instance via the Openness interface has been improved.

The tag "TagTableName" of an HMI tag shows in the TIA Openness Explorer the correct value now instead of the name of the tag group.

4.6.3 Improvements in Update 3

4.6.3.1 General improvements

This update contains the following improvements and changes:

Stability and performance

The stability and performance have been improved based on the feedback received and other factors.

Upgrading the device version of types

You can upgrade the device version of faceplate types or script module types, even if the type has been created in V18 or V18 Update 1 using the "Duplicate type" command.

Ports in topology view

The label of the ports of HMI devices in the topology view is displayed correctly.

Global search

The "Search in project" function in the global search has been improved.

Scripting

Use of the "\" character within tag names in scripts no longer leads to undesirable program behavior.

When a script module is used in an event list and converted to JavaScript, the "try... catch" instruction is now created correctly.

The references of faceplate types are displayed correctly in the "Scripts" editor.

Behavior when downloading script changes has been improved.

Copying global definitions

When copying multiple objects that use the same global definitions in scripts, the global definitions are not inserted more than once.

Number of tags

The number of PowerTags and the tags used is now correctly specified when compiling.

Scheduler: Using master copies

The copying of tasks from the Scheduler to the master copy of the project library is now possible without errors.

Cross-references

The cross-reference information has been improved.

View of Things

The rotation of dynamized objects is displayed correctly in Runtime.

Synchronous functions of an array, e.g. array.find, array.some, array.any, etc., are transferred from the WebWorker to an asynchronous version and can be used.

SiVArc

The generation of the position of faceplates has been improved.

The positioning of screen objects that is generated after a manual change to the screen objects has been improved.

4.6.3.2 Screens and screen objects

This update contains the following improvements and changes:

Configuring screens

The display of IO fields has been improved.

If you move objects between layers, they are displayed correctly in the editor.

The moving of individual objects in a group has been improved.

Size and position of objects can be changed correctly even after a rotation with the mouse.

You have placed objects in a screen for Unified PC outside the area visible in Runtime. The behavior of the focus when changing the size one of these objects or moving the object to the visible area has been improved.

The behavior of transparent graphics and graphic views with transparent background has been improved.

The width of the columns of a trend companion can be projected in the Inspector window.

For the objects from the "My controls" area, the display with rounded corners has been improved.

Bar

The subdivision lines of a bar are displayed correctly according to the settings in the properties.

Gauge

The color of the title is displayed correctly after the change of the configured foreground color.

Configuring IO fields

To define the behavior of the object in runtime, you select one or more of the following options under "Properties > General > Miscellaneous > Reaction to input":

- "Clear last value on focus". The last value is cleared when the IO field is selected.
- "Input on activate". The IO field changes automatically to input mode and allows an input to be made when the IO field is selected.

- "Accept value after exit". The entered value is applied to the process value on exiting the IO field.
- "Hidden input". If "Hidden input" is active, the IO field displays the substitute character "*" in place of the entered character. You can use the hidden input for the entry of a password, for example. The data format of the value entered cannot be recognized.

Screen window

The automatic generation of a screen window by dragging and dropping a screen from the project tree has been improved.

Resizing using "Fit window to screen" has been improved.

System diagnostics control

The display of the system diagnostics control is retained when the "Multiple" property is selected in "General > Diagnostic view > Selection - mode".

SVG graphics

The display of SVG graphics has been improved.

The insertion of SVG graphics in the work area has been improved.

Faceplates

The working with styles in faceplate types has been improved. In the editor, all available styles are made available for selection.

The "Go to library version" function is now possible for the inner faceplate type even if the outer faceplate type is opened read-only.

When using the "OpenFaceplateInPopup" method, the reference to the faceplate type is no longer lost when versioning the faceplate type. The version number is adjusted correctly in the script.

The behavior of events on objects in faceplate types has been improved.

The text boxes font is retained when upgrading the device version in the faceplate type.

When copying faceplate types with text boxes from a multilingual project to a new project, the project languages must be taken into account. If the project languages are not created in the new project before copying the faceplate type, texts can be lost.

Multilingual texts in the interface properties of a faceplate instance are retained after upgrading the device version.

4.6.4 Improvements in Update 2

4.6.4.1 General improvements

This update contains the following improvements and changes:

Stability and performance

The stability and performance have been improved based on the feedback received and other factors.

Dynamic SVG graphics

In French, the selection of dynamic SVG graphics is also possible via the file selection dialog.

I/O field

In Italian, the name of a newly created I/O field is displayed correctly.

Import of text lists

The import of a text list with parameter fields has been improved.

Faceplates

The specification on the designation of interface tags has been modified. Names that start with an underscore are not permitted any more.

4.6.4.2 Screens and screen objects

This update contains the following improvements and changes:

Transferring object properties

The visual highlighting of properties whose value differs from the specified style is also set correctly when properties are transferred using the "Transfer format" function.

"Layout" task card Scroll bar adjusted

When selecting an object in an image, the object is also focused correctly in the "Layer" palette in the "Layout" task card.

I/O field

The display of I/O fields has been improved.

Information has been added for the option "Use indirect addressing" or "Read only" in the "Tag > Settings" area:

- "Use indirect addressing": The configured tag of the "WString" data type must contain the name of another tag as text.
- "Read only": The change to the property value is not applied in the tag.

The "Read only" option is enabled by default.

Trend control

For trend control, set the desired time zone under "Properties > Properties > Miscellaneous > Time zone" by entering a decimal value for the time zone.

- "0" and positive numerical values: The values correspond to the index values of the Microsoft time zones.
- "-1": The local time zone of the device.

You can also set the time zone via a selection list in Runtime.

The legend is positioned in the same way in different trend controls, even under the following conditions:

- More than one trend area is configured.
- The first trend area in a trend control is set invisibly.

SVG graphics

The display of SVG graphics has been improved.

Dynamization with scripts

Editing of scripts created simultaneously for multiple objects has been improved.

Faceplates

When configuring a faceplate instance in a device with a predefined style, such as "Dark style", the faceplate is displayed correctly in this style.

When referencing faceplate types, spaces and dots within the faceplate name with underscores must be replaced. Reference faceplate types with full version number, for example: "Faceplate_1_V_0_0_1"

For faceplate types with the lowest device version V17.0.0.0 or V17.0.0.1, it is now possible to use user data types that were previously not permitted in TIA Portal V18 because they contain elements of an invalid data type. Access to the individual elements with an invalid data type is not possible. A corresponding error message is shown.

It is possible to upgrade the lowest device version of faceplate types in the project library or global libraries. You can upgrade individual or multiple faceplate types in parallel. To upgrade multiple faceplate types, you can also select folders or libraries. If a duplicate of the faceplate already exists with the specified lowest device version, the existing duplicate is retained. If faceplates are used in other faceplates with a lower device version, their lowest

device version will also be upgraded to the new lowest device version. The function for updating faceplates in the project library or global libraries also takes into account the lowest device version.

When creating a new faceplate type, the device version is set correctly.

4.6.4.3 Logical operators for expressions

Introduction

To dynamize object properties, tags can be linked in an expression by logical operators.

Input values for logical operators

The following applies to the input values for logic operations:

- Value 0 = FALSE
- Value not equal to 0 = TRUE

You can find the results of expressions with various values and operators in the tables below.

Defining the evaluation order

The parentheses define the evaluation order. The expression inside parentheses is evaluated first.

Examples:

- (TRUE OR FALSE)AND TRUE => (TRUE)AND TRUE => TRUE
- TRUE OR(FALSE AND TRUE) => TRUE OR(FALSE) => TRUE

Operator AND

Expression	Result
TRUE AND TRUE	TRUE
TRUE AND FALSE	FALSE
FALSE AND TRUE	FALSE
FALSE AND FALSE	FALSE

Operator OR

Expression	Result
TRUE OR TRUE	TRUE
TRUE OR FALSE	TRUE
FALSE OR TRUE	TRUE
FALSE OR FALSE	FALSE

Operator NOT

Expression	Result
NOT TRUE	FALSE
NOT FALSE	TRUE

When dynamizing an object property with the "NOT" operator, put the expression you want to negate in parentheses, for example, NOT('HMI_Tag_7').

Operator XOR

Expression	Result
TRUE XOR TRUE	FALSE
TRUE XOR FALSE	TRUE
FALSE XOR TRUE	TRUE
FALSE XOR FALSE	FALSE

4.6.5 Improvements in Update 1

4.6.5.1 General improvements

This update contains the following improvements and changes:

Stability and performance

The stability and performance have been improved based on the feedback received and other factors.

Special characters in the installation path

Even when the installation path contains special characters, objects are always visible when inserted into a screen.

Upgrading a device version in the library

The update provides you the possibility to upgrade the device version of faceplate types and script module types in the library.

To upgrade the device version, follow these steps:

1. Select a faceplate type, script module type, or folder in the library.
2. Open the shortcut menu and select "Upgrade device version".
   The "Upgrade device version" dialog box opens.
3. Select the required device version under "Lowest device version".
4. Select "OK".

Faceplates

Arrays are not supported when using the HMIUDT, WString, and WChar data types on the "Tag interface" tab of faceplate types. Therefore, the "Array limits" option has been disabled for these data types.

4.6.5.2 Screens and screen objects

This update contains the following improvements and changes:

Screen management

In the "Devices" area of the project tree, you can find a new "Screen management" folder.

You can create exactly one top-level screen window with screen management. For the top-level screen window, select a screen from the ones available.

You configure all properties of the top-level screen window in the Inspector window.

Zoom&Scroll for top-level screen window

For a top-level screen window, configure the following properties in particular:

- Zoom factor
- Position and visibility of the vertical scroll bar
- Position and visibility of the horizontal scroll bar

You configure the properties:

- In the screen editor of the top-level screen window
- In the Inspector window of the screen, with a screen window under:
  - "Properties > Properties > Format > Zoom - factor".
  - "Properties > Properties > Format > Horizontal scroll bar - position".
  - "Properties > Properties > Format > Vertical scroll bar - position".

In the engineering system, you dynamize the properties using tags or scripts.

You can use the dynamic properties to control the behavior of the screen in runtime.

Resize to display

In the project, you can swap one device for another device with different display size. To adjust the configured screen size to the size of the new target device, use the "Resize to display" function:

1. Select the screen in the project tree.
2. Right-click on the screen. The shortcut menu is opened.
3. Select "Resize to display".

The configured screen size is adapted to the size of the new target device.

Extension of the toolbar in the screen editor

To efficiently configure the frequently used properties, the following functions have been added to the toolbar in the screen editor:

- Font:
  - Font
  - Font size
  - Format bold font
  - Format italic font
  - Underline
  - Strikethrough
  - Increase font size
  - Decrease font size
- Horizontal text alignment:
  - Left
  - Centered
  - Right
- Specify border width or line width
- Line type:
  - Solid
  - Dashed
  - Dotted
  - Dash-dot
  - Dash-dot-dot

The added functions are disabled for grouped objects when a group is selected.

The functions are enabled when a property in one or more objects can be changed.

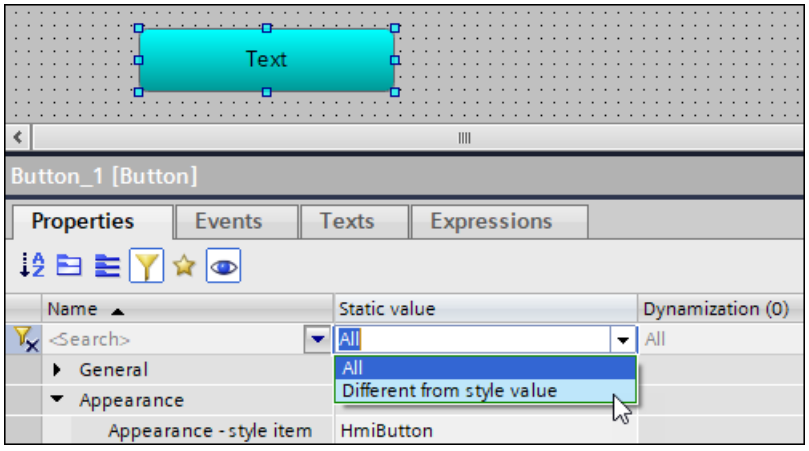
Highlighting and resetting properties of screens and screen objects

You can set one of the three pre-defined styles in the project tree of the project in the runtime settings.

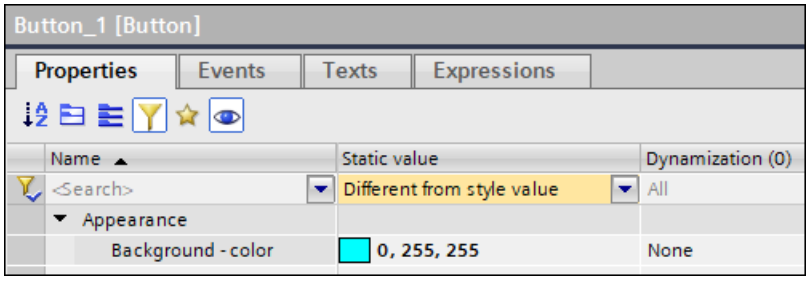
Within the selected style, you can change some properties of screens and screen objects in the Inspector window, for example the background color.

To find the changed properties, follow these steps:

1. Click on the "Filter" icon.
2. In the "Static value" column, select "Different from Style value".

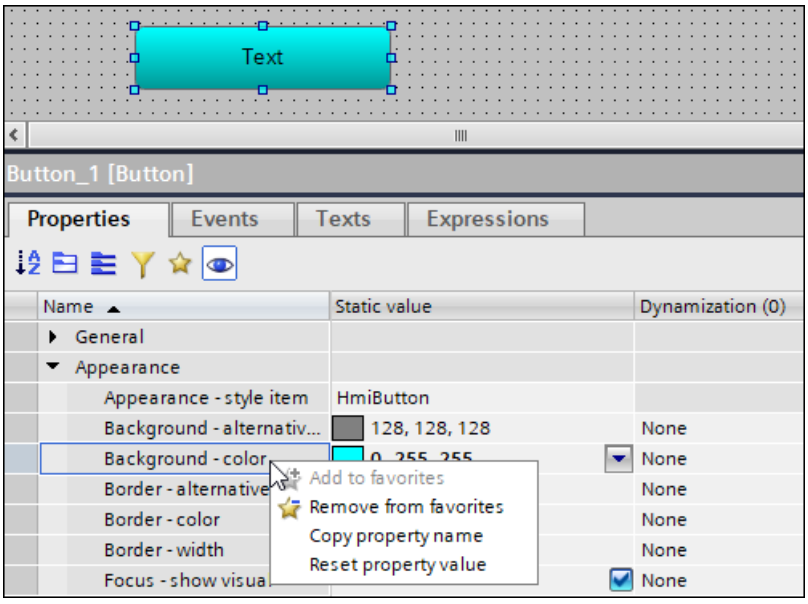


All changed properties are displayed and are formatted bold in the "Static value" column.



To reset the changed property value to the default value of the selected style, follow these steps:

1. Right-click on the property. The shortcut menu is opened.
2. Select "Reset property value".



The property value is reset to the default value of the selected style.

You can reset the following properties:

- Manually set properties.
- Properties that have a corresponding value in the current style.

The properties that do not have a style value are not formatted bolded or displayed in the filter, even when they are set manually.

Optimizing the display of properties

The overview in the Inspector window under "Properties" has been improved with the update. For properties that contain a collection of objects, the following changes have been made for the expandable table:

- Cells without content are displayed in space-saving manner.
- Check boxes and numeric values are displayed centered.
- Modified sorting of the columns is saved across projects.
- Modified visibility of the columns is saved across projects.

The "Selection items" table of the "Check box" element and the "Trend areas" table of the "Trend control" control are affected.

4.7 Unified PC

4.7.1 Important notes

This page contains important information about product properties.

Script debugging

If you use a script debugger and want to display the time stamp of a tag or an alarm in the monitoring window, only the type of the script variable "HMIDatePrecise" is visible. The time stamp itself is not visible.

To display the time stamp, convert the script variables that contain the time stamp with the command
myTag.toString();

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.).

Microsoft Edge - Restriction

If you want to start Runtime in Microsoft Edge and enter the address "https://localhost", the error message "INET_E_RESOURCE_NOT_FOUND" appears. In this case, use the address "https://localhost/WebRH".

Project operations

The stability of project operations has been improved. Connection Manager now loads libraries from the correct path.

Bar and slider

If the height is smaller than 100 px and the width is smaller than 30 px for the controls "Bar" and "Slider", the Controls in the Engineering System and in Runtime are displayed as rectangles in light and dark types in compact mode. The values, bars and indicators are also displayed correctly in compact mode.

Alarm control

- An alarm with the state machine "Alarm without inactive state without acknowledgment" is only displayed in the "Show logged alarms" and "Show and update logged alarms" views.
- The "Information" alarm class has the state machine "Active", which defines an alarm without state. The alarm is therefore triggered immediately and deleted. When the value is evaluated, all bits are evaluated; in the case of bit [0] and bit [2] this means that the alarm is triggered even though only bit [2] is changed - the entire value is evaluated.
- The "Alarm filter" dialog box does not support brackets in the text area.

WinCC Unified Tag Simulator

The WinCC Unified Tag Simulator is not part of WinCC Unified V18 and its updates.

Script debugger

To activate the script debugger in SIMATIC Runtime Manager, the logged-in user must belong to the "SIMATIC HMI" Windows user group.

Unified Collaboration

Collaboration devices must be synchronized in time.

Record / Play function

When using the Record/Play function, the runtime system settings made during installation or later in WinCC Unified Configuration Manager are not recorded.

Silent installation of Runtime via the Record/Play function is not supported.

Changing user management settings

If you change the user management settings during installation or later in the "User management" step in the WinCC Unified Configuration, a self-signed web server certificate is generated and bound to the website when the settings are applied. It replaces the certificate that was previously bound to the website. If a trust relationship existed between the web server and clients, the clients no longer trust the web server.

To revert back to the previously used web server certificate, proceed as follows:

1. Start WinCC Unified Configuration.
2. In the "Website settings" step, select the "Select an existing certificate" option.
3. Select the previously used certificate.
4. Apply your settings.

The certificate is now bound to the website.

Repair installation

If you upgrade an HMI device with WinCC Unified Runtime V18 Installation to V18 Update 3 and perform a repair installation for V18 at a later point, this is terminated with an error.

Follow these steps:

1. Uninstall V18 on the device.
2. Install V18 on the device.
3. Upgrade the device to V18 Update 3.

Currently there is no scenario which requires a repair installation after upgrading to V18 Update 3.

Reporting: Creating a report template

In the configuration of the logging tags of a single value segment you configure which date and which time the log entry has with the settings "Time stamp" and "Calculation mode" whose value is then read in from Runtime:

Calculation mode	Read-in value
Left	The value of the log entry that precedes the time determined by the "Time stamp".
Right	The value of the log entry which was logged at the time determined by the "Time stamp". If there is no log entry with this time stamp, the value of the log entry is read that succeeds the time determined by the "Time stamp".
Interpolate	The values which the calculation modes "Left" and "Right" supply are interpolated linearly and the result is written into the report during generation. This mode can only use values of log entries with a valid quality code.

If the time stamp of the log entry is also output in the report, the time stamp of the log value actually read in is applied for the calculation modes "Left" and "Right". The time determined by "Time stamp" is used for the "Interpolated" calculation mode.

Connecting with a Runtime system via the ODK

If you want to connect with a Runtime system via ODK, use the collaboration name of the HMI device.

SIMATIC Runtime Manager

- Opening several SIMATIC Runtime Manager instances on the same device is not supported.
- Do not change the user logged in to Windows while a Runtime Manager instance is open.

4.7.2 Improvements in Update 5

This update contains the following improvements and changes:

Stability and performance

The stability and performance have been improved based on the feedback received and other factors.

4.7.3 Improvements in Update 4

This update contains the following improvements and changes:

Stability and performance

The stability and performance have been improved based on the feedback received and other factors.

Data logging

Negative effects on the performance of Runtime through the use of tag logging have been resolved.

Reports

Time format for LTime tags in reports

If a single value segment of a report template reads a tag or logging tag of the type LTime, you can now specify in the report template in which time format the tag value is output in the generated report.

Follow these steps:

1. In the report template, read the Runtime data into Excel once.
2. Format the time value read into the cell as required.

When the report is generated, the formatting is retained.

Quick generation

The generation of reports has been improved. Reports with 1000 or more single value segments and with single value segments to which graphic lists are assigned are now generated more quickly.

Defining the timeout

You have the option of defining a timeout for the generation of reports in PDF format:

1. Open the following file:
   <Unified installation directory>\bin\REPCreator\js\installerConfig.json
2. Add the attribute "timeout" and a time value in milliseconds to the entry in the file.
   Example: `{"useApp": "Excel", "path": null, "timeout": 60000}`

The timeout applies to all report jobs with the target format PDF. If the timeout is exceeded, the generation is canceled. A status message is generated in the control.

External database access via script

A storage leak when accessing an external database via script has been resolved.

Deleting projects in SIMATIC Runtime Manager

When deleting a project in Runtime Manager the user alarm and information bar now show the correct text.

GraphQL

When accessing a GraphQL client on a Control, the client now also transfers users with which the client is logged on to Runtime.

This enables you to access a Runtime project with the GraphQL client whose user administration data was loaded previously, independent of the current Runtime project.

Localized strings in faceplates after a language change

After a language change in Runtime, localized texts in faceplates are now displayed in the right language.

Reading nested user data types with ODK

Instances of nested user data types are now read correctly.

Parameter set control

The selection boxes in the parameter set control function flawlessly.

After switching languages in Runtime, the parameter set names are displayed correctly.

The property "Operator control - allow" for columns is applied correctly to Runtime.

Alarm control

The most recent logged alarms are displayed correctly.

The display of the alarm control has been improved.

The configuration of the column width in the alarm control has been improved. Alarms and texts of the header are displayed correctly.

Logged alarms are displayed correctly.

Time synchronization between HMI and PLC

The alarms "partner requires correction of timing" are triggered when the time stamp of the times delivered by the I/O devices (S7, S7+, OPC UA) deviates by more than 3 seconds from the time of the HMI device and as a result must be corrected.

The faulty occurrence of the alarms has been solved. The alarms may legitimately occur after a foreseeable time (3 days).

PLC code view

Scrolling in the PLC code view functions correctly.

Constants in the footer and header areas of the comparison operations in the PLC code view are displayed correctly. The value comes first, followed by the name of the constant.

The display of the PLC code view has been modified and the networks are displayed correctly.

Value changes to the PLC block are transferred directly into the PLC code view.

Parameter names are displayed in full in the PLC code view.

Faceplate in main screen window

Faceplates are displayed correctly in the main screen windows if the setting "Fit screen to window" is set for the main screen window.

Screen keyboard on touch devices:

Screen keyboard on a touch device is correctly displayed after activation through an I/O field.

Calendar format

After switching the Runtime language from English to German the first day in the calendar is shown as Monday.

Text box

The text in the object is correctly displayed in the Engineering System and in Runtime independent of how the static value is set in the property "Format > Alignment - vertical".

Symbolic I/O field

The scroll bars in the symbolic I/O field function correctly.

The scroll bars in the symbolic I/O field are correctly displayed independent of how the static value in the property "Format > Distance > Position - Left" is configured for the symbolic I/O field.

Bar and slider

The controls "Bar" and "Slider" are displayed in the Engineering System and in Runtime in extended, light and dark styles and correctly displayed with all modes of the process value indicator.

The controls "Bar" and "Slider" are displayed correctly in the Engineering System and in Runtime in compact mode.

Trend control

Session local tags are correctly displayed in the trend view.

Archive tags are correctly displayed in the trend view.

Browser

If the control is opened in a popup window, the URL is displayed correctly in the browser.

Popup windows are correctly displayed in the "Browser" Control in accordance with the size change of the browser.

Dynamization of the visibility of the levels

The dynamization of the visibility of the levels via expressions functions correctly.

Text alignment in the object "Text"

The text alignment after a line break in the object "Text" is consistent between Engineering and Runtime.

Flashing during color dynamization

The flashing during color dynamization starts without delay.

Access point for the communication with PLC

During the definition of the access point of the application in the dialog "Set PG/PC interface" and during the configuration of the connection of an HMI device to a PLC in the Engineering System you can now also use two letters as identifier for the access point of the application.

Export of data in Audit

The data export in Audit takes place without errors.

View of Things

The tag value of the data type "Time" is transferred correctly from an I/O field in the VoT application into the PLC.

Time synchronization between Runtime and PLC

The alarm with the ID 537526277 "partner requires correction of timing" is triggered when the time stamp of the times delivered by the I/O devices (S7, S7+, OPC UA) deviates by more than 3 seconds from the time of the HMI device and as a result must be corrected.

The faulty occurrence of the alarm has been resolved. The alarm may legitimately occur after a foreseeable time (3 days).

4.7.4 Improvements in Update 3

4.7.4.1 General improvements

This update contains the following improvements and changes:

Stability and performance

The stability and performance have been improved based on the feedback received and other factors.

Continuous operation with Edge

It is possible to use Microsoft Edge as a Web client in continuous operation.

Substitute font not installed

If a font that is not installed on the HMI device was configured in the engineering system, Runtime uses the substitute font instead.

If the substitute font is not installed on the HMI device, the download to the device fails and a corresponding error message is generated.

Popups

The display of popups in combination with the zoom function has been improved.

User management in Runtime

Logging in to the user management home page in Runtime works correctly regardless of whether "Runtime timeout" has been enabled or disabled for the user.

Scripting

If you have dynamized several screen objects in a screen with scripts with different triggers (events, properties, etc.), the dynamizations are also correctly implemented after a delta download.

The functioning of subscriptions has been improved. If a subscription is triggered when a tag is updated, no additional scripts are run.

The output in the Trace Viewer has been improved. When script errors associated with writing and reading of properties occur, the call stack with module name, method and line number is output.

Traces in scripts that are triggered by a scheduled task are also displayed in the Trace Viewer if the script debuggers have been activated.

Logging

If you work in MS SQL databases with SQL Server 2016 or higher, unused memory may be allocated instead of being used efficiently in the case of few write operations in the respective interval.

In this case, activate "SQL Server Trace Flag 692" globally in the startup parameters for the installation of the MS SQL Server instance.

Scheduler: Multiple alarms

If multiple alarms are triggered, all alarms are listed in the return value "alarmResultArray".

Communication with Allen Bradley

Unsigned data types such as UINT, UDINT, USINT, and ULINT are transmitted correctly via Ethernet/IP.

Audit

The value change of a GMP-relevant HMI tag using the slider is correctly logged in the Audit Trail. When the "Comment required" and "Electronic signature" options are selected, correct values are displayed in the corresponding dialog.

The change of a tag of data type "Bool" using the "InvertBitInTag" function is correctly logged in the Audit Trail.

Touch operation

The response times for user interactions on a touch panel have been improved.

4.7.4.2 Screens and screen objects

This update contains the following improvements and changes:

Font

The font is displayed in the same way in the engineering system and in Runtime on Unified Comfort Panel and on Unified PC.

Displaying buttons after user change

The display of buttons has been improved. If the logged on user lacks the function right to operate the button and you switch to a user with the corresponding function right, the buttons are no longer grayed out.

Grouped objects

The dynamization of grouped objects is displayed correctly in Runtime.

Zooming and scrolling

Improved behavior when zooming and scrolling in Runtime. Faceplates are only hidden when they are completely outside of the visible area.

Text field

The input of multi-line text with <Return> and <Shift + Return> in a text field in Runtime has been improved.

Gauge

The color of the trend indicator is displayed correctly.

Slider

The graduation marks are displayed correctly in Runtime regardless of automatic scaling.

Symbolic IO field

The behavior when scrolling in symbolic IO fields has been improved.

Alarm control

The sorting in the alarm control has been improved.

The display of archived alarms in the alarm control has been improved.

The operation of the vertical scroll bar in the alarm control has been improved.

The display of alarms when remotely accessing a Unified Comfort Panel has been improved.

Alarms regarding a necessary correction of the reporting time of the partner device are output correctly.

Configured output formats such as {D} or {T} are also evaluated correctly if the "Time" and "Date" columns are configured with different output formats in an alarm display.

Trend control

The names of the axes can be read correctly via scripts.

Trends are also displayed correctly after changing the time range.

Dynamic SVG graphics

After a delta download, renamed dynamic SVG graphics are displayed correctly in Runtime.

Faceplates

The use of popup windows has been improved. Static and dynamic content in popup windows are loaded correctly when opened.

The function of the "Visible" object property when using faceplates in faceplates has been improved.

The change of the properties of popup windows by scripting is executed correctly.

PLC user data types that use data types "IP_V4" and "IP_V6" can be used in the tag interface of a faceplate type.

4.7.4.3 Parameter sets and parameter set control

This update contains the following improvements and changes:

Parameter sets

The "RenameParameterSet" system function has been improved.

Parameter sets and parameter set control

Parameter sets are correctly displayed after refreshing the web page.

The reading and writing of parameter sets has been improved.

The input of a time value of "LTime" type in the parameter set control has been improved. The correct time value is applied and defined limit values are taken into account.

A user data type with elements of type "String" or "WString" that have a defined character length can be used in parameter set types. The defined character length is correctly applied to the parameter set element in the parameter set control.

The import and export of parameter sets has been improved

The ID of the parameter set is retained in the parameter set control after a screen change.

Loading a parameter set using the "LoadParameterSet" method results in a correct reading of the values of the parameter set.

If you enter a value in a parameter set that is greater than the maximum value set, an error message is displayed.

4.7.4.4 Diagnostics

This update contains the following improvements and changes:

System diagnostics

The switching of the view in the system diagnostics display has been improved.

Error messages from ports are correctly displayed in the matrix view.

Criteria analysis view

If the upstream network has been changed, the alarm is not be triggered again. This leads to inconsistencies between the network and faulty operands. As a result, the criteria analysis view cannot correctly display the faulty operands. If the alarm is triggered again, the faulty operands are displayed correctly again in the criteria analysis view.

PLC code view

The tag name and address of an operand connected to an SR/RS flip-flop are displayed correctly.

The display of sequencers in the GRAPH overview and PLC code view has been improved. The highlighting of the currently selected step is displayed correctly.

4.7.4.5 My WinCC Unified (Autologin)

Introduction

With the My WinCC Unified web application, you can define for a Unified PC how Runtime is displayed in its web clients.

My WinCC Unified is rule-based. For each rule, you can define:

- For which client device the rule applies.
  The rule is applied to all web clients that are installed on the client device and which log in to the Runtime of the Unified PC.
- Whether auto-login is active.
  If auto-login is enabled, the web client can automatically log in to Runtime without entering a user name and password (auto-login).
  A default user who has no function rights is used to log in.
- Which start screen is displayed after logging in to Runtime.
- Further details on the display of the start screen (section, start point etc.)

Restrictions

- My WinCC Unified is only available for Unified PCs.
- If auto-login is active for a rule, it is not possible to operate objects or functions that are linked to function rights after the automatic login to Runtime.
- The client devices for which you create rules must have static IP addresses.

Requirements

The login to My WinCC Unified requires the function right of remote access.

Installing My WinCC Unified on a Unified PC

1. Install the WinCC Unified Runtime V18 Update3 on the Unified PC.
2. Check whether the Unified PC in the engineering system has the configured Runtime version V18.0.0.2 or higher.
   If this is not the case, upgrade the configured Runtime version.
3. Reload the Unified PC into the device.

Note

This step is also required if the correct Runtime version has been configured in the engineering system.

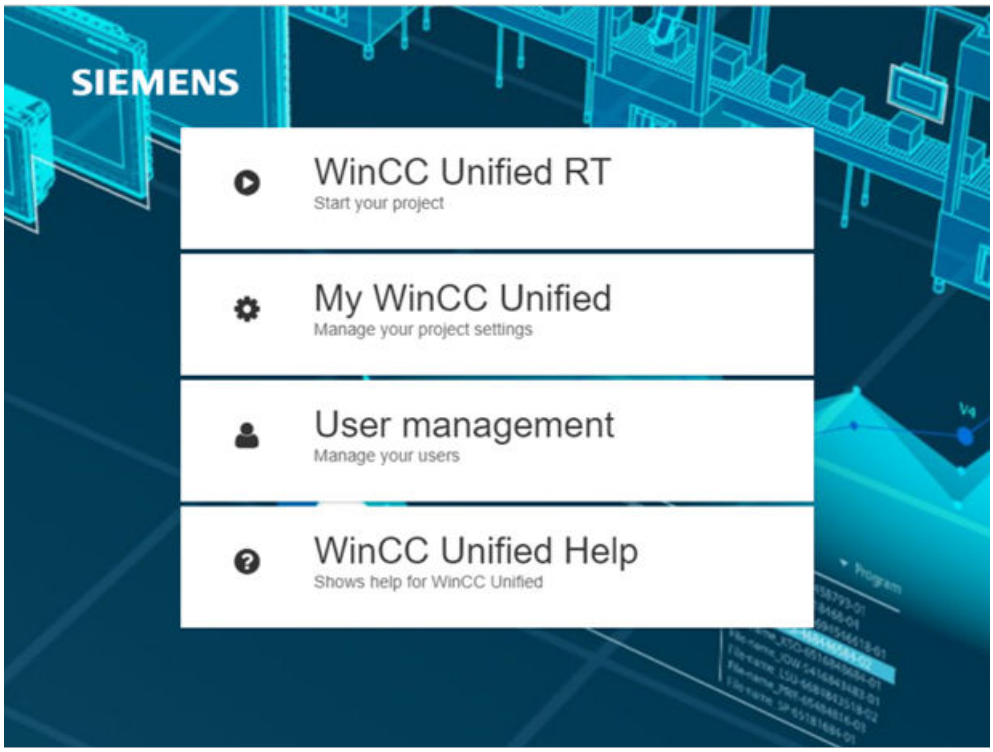
Opening My WinCC Unified

Note

In addition to the above-mentioned requirements, which are specific to My WinCC Unified, the same requirements apply as for logging in to Runtime in a web client.

1. Start the web client.
2. Enter the URL of Unified in the address line of the browser: "https://<IP address of the HMI device or its FQDN or device name>".

3. Press Enter.
   The Unified home page appears:



Note

If you do not see the "My WinCC Unified" entry on the home page, delete the browser data completely (history, form entries, etc.), and reload the page.

4. Click "My WinCC Unified".
   The application is opened in a new tab. You see the logon dialog.
5. Enter the user name and password of a user with the necessary function right and select another language if required.
6. Confirm your input.

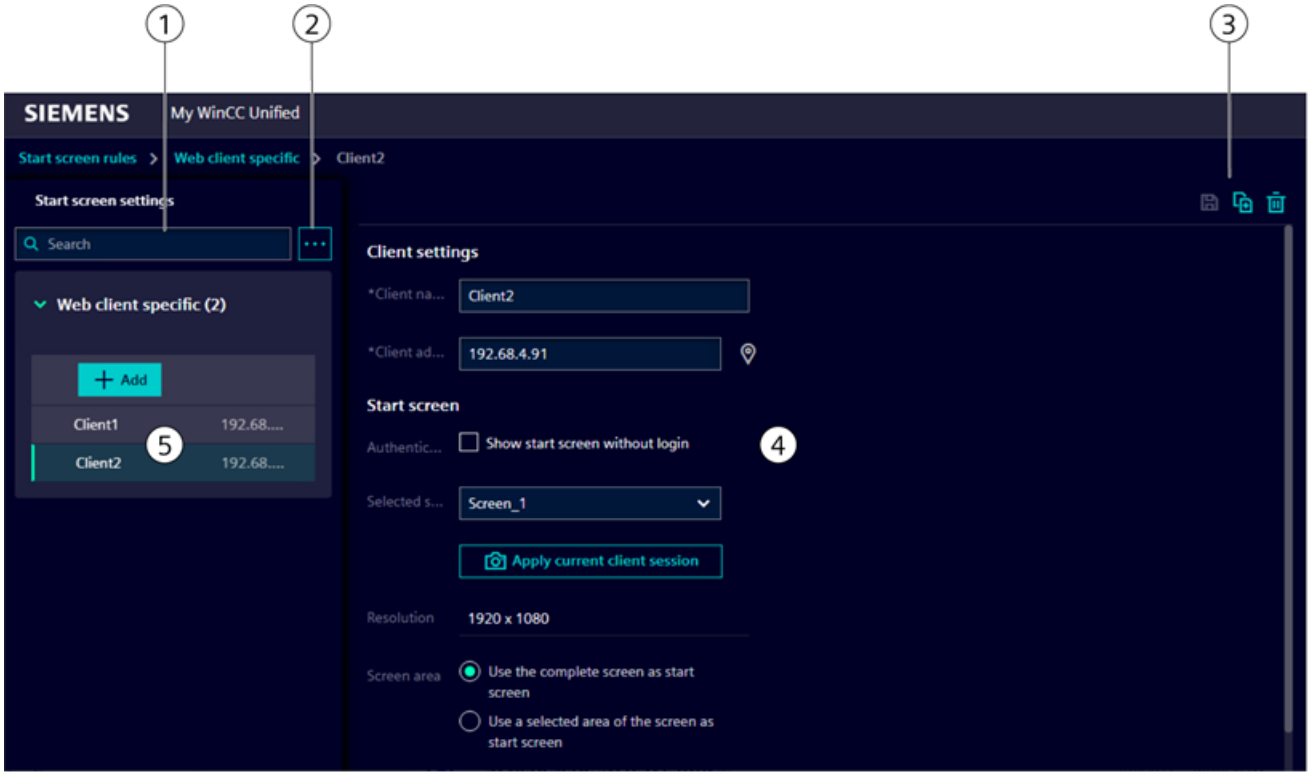
My WinCC Unified is opened. In the navigation area, you can see the rules that have been added to the project running in Runtime.

Note

After login, My WinCC Unified has the user interface language that you selected during login. If you have not selected a language, the language that is set for the browser is used.

User interface

My WinCC Unified has the following user interface:



① Search field

Filters the rules displayed in the navigator by the search string.

② Button

Opens a menu for the export and import of rules.

③ Toolbar:

- Saves the changes to the rule currently loaded in the work area.
- Adds a new rule in the navigator and loads it in the work area.
  With the exception of the client settings, the new rule inherits the settings of the rule previously displayed in the work area.
- Deletes the rule that is currently loaded in the work area.

④ Work area

Shows the rule selected in the navigator.

⑤ Navigator

Shows the added rules. The rules are sorted according to when they are added.

By clicking on a rule, you load it into the work area.

By clicking "+ Add" a new rule is displayed in the work area. It starts with the default settings.

Working with rules

You have the following options:

Add	1. Click "Add" in the navigator. The new rule is displayed in the work area. It starts with the default settings. Or click in the toolbar  . With the exception of the client settings, the new rule inherits the settings of the rule previously displayed in the work area. 2. Configure the settings of the rule as required as described below. 3. Click in the toolbar  .
Duplicate	1. Load a rule into the work area. 2. Click in the toolbar  . With the exception of the client settings, the new rule inherits the settings of the rule previously displayed in the work area. 3. Configure the settings of the rule as required as described below. 4. Click in the toolbar  .
Edit	1. Click a rule in the navigator. The rule is loaded into the work area. 2. If required, edit the settings of the rule. 3. Click in the toolbar  .
Delete	1. Click a rule in the navigator. The rule is loaded into the work area. 2. Click in the toolbar  .
Export	1. Click "..." in the navigator. 2. Select "Export". All rules defined in the navigator are exported to a YAML file, in the download folder preset on the device. If required, edit the file and import it to other client devices.
Import	1. Click "..." in the navigator. 2. Select the desired YAML file in the file browser and confirm your entries. The rules from the file are imported into the navigator. If a rule has been defined in the file and in the navigator for the same client device, the settings are applied from the file.

Settings

For each rule, you configure the following settings:

"Client settings"	
"Client name"	Mandatory field The device name or FQDN (Fully Qualified Domain Name) If the rule applies to the local web clients of the Unified PC, you can also enter "localhost".
"Client address"	Mandatory field The IP address You have the following options: • Enter an IP address or multiple IP address (e.g. `192.65.168.160` or `192.65.168.160, 192.65.168.165`). The rule applies to this device(s). • Enter an IP address range (e.g. `192.65.168.160-192.65.168.190`). The rule applies to all devices in this address range. • Combine these options (e.g. `192.65.168.160`, `192.65.168.165-192.65.168.190`).

Note

Do not enter an IP address in multiple rules.

If you enter an IP address in a rule and the IP address also belongs to the address range configured in another rule, the rule in which you entered the IP address is applied.

Examples of "Client address"

You define the following rules:

- 1st rule: "Client address": `192.65.168.165`
  Successfully saved.
- 2nd rule: "Client address": `192.65.168.160-192.65.168.190, 192.65.168.199`
  Successfully saved. For the display of Runtime on the client device with the IP address 192.65.168.165, the 1st rule is applied.
- 3rd rule: "Client address": 192.65.168.199
  Saving is not successful because the IP address is already entered in the 2nd rule.

"Start picture"	
"Authentication"	"Show start screen without login" option: • Enabled: The web clients of the device are logged in to Runtime with a default user without user input. You automatically see the start screen that is usually configured. • Disabled: The web clients of the device must enter their user name and password to log in to Runtime.
"Selected start screen"	Select the start screen: You are offered all the start screens of the project running in Runtime.
"Apply current client session"	If WinCC Unified Runtime is open in the same web client, click this button to apply the settings of the screen currently displayed in Runtime to the rule. Button is disabled if more than 1 address or an address range is entered under "Client address".

"Start picture"	
"Resolution"	The resolution configured in engineering Read-only
"Screen area"	"Use the complete screen as start screen" option: The complete process picture is displayed as the start screen.
	"Use a selected screen area as start screen" option: Only the area of the process picture selected under "Screen area" is displayed as the start screen.

"Screen area"	
"Zoom factor"	Enter the zoom factor. Default setting: 100%
"Start point X", "Start point Y"	Enter the starting point of the upper left corner of the screen area to be displayed. Default setting: 0

4.7.5 Improvements in Update 2

4.7.5.1 General improvements

This update contains the following improvements and changes:

Stability and performance

The stability and performance have been improved based on the feedback received and other factors.

Parameter sets and parameter set control

The selectable buttons of the function bar of the parameter set control remain selectable when changing the style in Runtime.

If flexible limits are violated when passing values to parameter set elements, a system alarm is output. The system alarm contains the name of the parameter set element and the corresponding limit.

The order of the elements of user data types in parameter sets is retained when parameter sets are exported.

Scripting

When a script dynamizes the "Change" property of the screen in a screen window, the return value "value" in the script correctly returns the screen name.

The "Add comment to log tag" script template has been improved. The comment is stored with the current system time in the "LoggedComment" table in the associated Runtime log file.

The performance of the debugger during runtime has been improved. The GfxRTS application is not executed multiple times.

Runtime

- When logging on to Runtime with a UMC user, the language specified by UMC is displayed, and when logging on with the default user, the last language displayed in Runtime is displayed. When logging in for the first time with the default user, the default language for the project is used.
- Improved behavior when zooming and scrolling in Runtime. Faceplates are only hidden when they are completely outside of the visible area.
- When you zoom in a Chrome or Edge web client, the texts are now also correctly enlarged or reduced.
- After the installation of the update, the functionality of PLCSIM is restored after a change of the Windows user.
- The behavior when moving objects has been corrected. Runtime clients remain operable when you move an object in runtime while a script disables the "Moveable" property.
- The predefined session local tags @CurrentLanguage, @LocalMachineName and @UserName are now read or set correctly even after stopping and restarting Runtime.
- If a button is pressed and a screen change takes place at the same time, the event configured for "Release" is now triggered.

Reporting

Report jobs with a tag trigger are now executed reliably if the trigger tag is connected to a tag from a third-party PLC.

WebClient

The display of user-defined fonts in text fields has been corrected.

OPC UA

The registration of tags on the OPC UA server has been optimized.

View of Things

Improved behavior when zooming.

4.7.5.2 Screens and screen objects

This update contains the following improvements and changes:

I/O field

Entering information in I/O fields in Runtime has been improved.

When a screen with a system diagnostics control is called in Runtime, entering values in I/O fields of type "Real" is no longer blocked.

Symbolic I/O field

The display of symbolic I/O fields in Runtime has been improved:

- When expanding, symbolic I/O fields in faceplates and screen windows are now always displayed in full.
- After selecting an entry of a symbolic I/O field, the text is now displayed correctly.
- The transparent display of symbolic I/O fields in dark and light pre-defined styles has been improved.
- Non-operable symbolic I/O fields are now displayed correctly.

Alarm control

Sorting of alarms in logged alarms has been improved.

Scrolling in the alarm control has been improved.

The mouse icon is displayed correctly when moving the mouse in the grid area.

Scrolling in the alarm control has been improved.

Group acknowledgment is also possible for partially visible alarm lines.

The status of PLC alarms is displayed correctly in Runtime after acknowledgment.

If AutoScroll is active in alarm control, the scroll bars are disabled.

Trend control

The display name of the selected trend is displayed correctly after the trend is changed.

Automatic scaling in the trend control works correctly after changing the value axes.

The time zone is displayed correctly.

Touch area

The function of the touch area has been improved.

Gauge

The color of the title is displayed correctly in Runtime.

The color of the trend indicator is displayed correctly in Runtime.

Faceplates

The following changes have been implemented in the display of faceplates in Runtime:

- When switching from collaboration screens to screens with faceplates, the faceplates are displayed correctly.
- The dynamic color representation of dynamic SVGs in faceplates is displayed correctly.
- The behavior for displaying faceplates in pop-up windows has been improved.
- The scaling of faceplates in screen windows with several screens of different sizes has been improved.

Dynamization

When you click on a screen object in runtime, the click event is triggered only for that screen object and no longer for the screen.

4.7.5.3 Diagnostics

This update contains the following improvements and changes:

System diagnostics

Changing the status in dynamic SVGs via the "DiagnosticsIndicatorTag" tag is now displayed correctly in existing projects.

System diagnostics control

When a screen with a system diagnostics control is called in Runtime, entering values in I/O fields of type "Real" is no longer blocked.

Improved the display of the status path when browsing the Matrix view to the diagnostic buffer on a PC.

Changing the view type via dynamization with a tag has been improved.

The display of the hardware detail view in the matrix view has been improved.

Improved column width customization in Hardware Detail view in Runtime.

Dynamization of the "Matrix view" view type in Runtime has been improved.

ProDiag overview

The "ProDiag Overview" object displays the correct network connection state.

Delta downloading is now also possible after changing the "DB name" property in the "ProDiag overview" object.

PLC code view

The display of the entire block when switching the detail view and after changing the style has been improved.

The display of the GRAPH sequence with the "Time" data type after switching the GRAPH mode from step to transition has been corrected.

The initialization of the PLC code view via the "GRAPH overview" with the help of system functions "OpenScreenInPopup" and "OpenGRAPHViewerFromOverview" has been improved.

The display of the GRAPH sequence in the graphical programming languages FBD and LAD in the "PLC code view" object has been improved.

The display of the FBD blocks in the "PLC code view" object using the system functions "OpenPLCCodeViewByFCCall" and "OpenPLCViewbyCall" has been corrected.

The display of the assignment in the network has been improved.

The operands are now displayed correctly with an address.

4.7.5.4 Audit

This update contains the following improvements and changes:

Audit

The Audit Viewer control has been improved.

The deletion of the selected query in the audit query is executed correctly.

The "Sort columns" function in the Audit Viewer has been improved.

The "New Value" filter function in the Audit Viewer is executed correctly.

The column details of the time stamp exported by the Audit Viewer are displayed in "Date, time" format.

The function of the filters for audit queries has been improved.

The request for the electronic signature is performed correctly.

The query message is displayed correctly in the information bar.

The acknowledgment dialog for a button configured with the "InsertElectronicRecord" system function and a predefined text list is displayed correctly.

The export and import of the reason and the signature are executed correctly.

The "Reason" column contains correct information in the exported Audit Trail.

The configuration for the use of electronic signatures is correctly evaluated in Runtime.

4.7.5.5 Improvements in WinCC Unified Certificate Manager

"New certificate" dialog

In WinCC Unified Certificate Manager, the interface of the "New certificate authority" and "New certificate" dialogs has been improved. The dialogs now have tabs:

- "General" tab
  The general properties of the new certificate authority or the new certificate, e.g. name and name of the organization.
- "Security" tab
  Security-related properties of the new certificate authority or certificate, e.g. cryptographic key length and lifetime.

The properties you can edit on the tabs depend on the certificate type. You can edit more properties in general certificates than in the other certificates.

General certificates:

Introduction

Certificate Manager now supports the creation of general CA-based certificates. A device added in Certificate Manager can have multiple general certificates.

Installing a general certificate on its device is not done with Certificate Manager.

Application examples

- Protecting communication of custom applications
  Examples: ODK applications for HMI devices, applications for other devices
- When using local web clients that log in with RFID and PM-LOGON: When creating the certificate that the PM-LOGON server uses to authenticate itself to its clients

Advantage

- Secure communication as well as easy establishment of the trust relationship by installing the root certificate
- Automatic trust relationship if the device and its communication partner have the same certificate authority or the communication partner already trusts the root certificate of the certificate authority

Requirement

- WinCC Unified Runtime is installed on a PC.
- The PC serves as the certificate authority device for the CA-based communication of your HMI devices.
- A certificate authority has already been created on the PC in Certificate Manager.
- For an application created for Unified Panel to use the panel's general certificate, it must address the panel's certificate store.

Using general certificates

1. Start WinCC Unified Certificate Manager on the certificate authority device.
2. If the device for which you want to create the general certificate is not yet part of the CA infrastructure, add it.
3. Then right-click on the device and select "Add Certificate > General...".
4. Enter the properties of the certificate in the "New certificate" dialog.
   The following applies:
   - You can use a template. To do this, enable the "Use template" option and select the template from the list next to it.

     Note

     Only 1 template is available in the current version.

     Alternatively, you can duplicate a general certificate that has already been added and change the desired properties on the duplicate.

   - "Security" tab, "Key usage" and "Extended key usage" fields: To add, delete or edit a usage, right-click in the field and select the desired command.
5. Prepare to install the general certificate on the device. Follow these steps:
   - Right-click on the general certificate and select "Export certificate ...".
     The "Export certificate" dialog opens.
   - Select the option "Export with private key".
   - To protect the use of the private key, assign a password.

     Note

     To be able to use the private key, the target application must also provide this password.

   - Specify the format for the export. Activate one of the following options for this:

"Export public certificate in DER format"	Public key and private key are exported to a common PFX file.
"Export public certificate in PEM format"	Public key and private key are each exported to a separate PEM file.

   - Click "Export".
   - Select the storage location and confirm your entry.
6. Transfer the file or files to the device.

7. Install the certificate private key and public key in the device's own certificates. Proceed as described in the user help for the specific device or application.

   Note

   If the device is a Unified Panel, install them in the certificate store of the panel. Use "Control Panel > Security > Certificates".

   If the device is a Unified PC, the certificate store depends on the implementation of the application. It is possible to use the following certificate stores:

   - Windows certificate store
     Double-click the export file(s). Manually install the file(s) in the Windows certificate store to the appropriate folder.
   - WinCC Unified certificate store, other file-based certificate stores
     Copy the file(s) manually in a file explorer to the appropriate folder of the certificate store.

   Installation with Certificate Manager is not possible

8. If necessary, establish the trust relationship between the device and its communication partner.

   Note

   In the following cases, the communication partner already trusts the root certificate and thus also the general certificate of the device:

   - The communication partner is an HMI device. The HMI device has the same certificate authority as the device. The certificate configuration of the HMI device is installed on the HMI device.
   - The device and its communication partner have different certificate authorities. The communication partner is already communicating with another device that has the same Unified certificate authority as the device with the general certificate.

   Follow these steps:

   – Export the root certificate and its CRL file in Certificate Manager on the certificate authority device.

   – Transfer the root certificate file and the CRL file to the communication partner device.

   – Install the root certificate on the device of the communication partner's in the Trusted Root Certification Authorities folder.
     Proceed as described in the user help for the respective device.
     If the communication partner is a Unified PC, use SIMATIC Runtime Manager for this.
     If the communication partner is a Unified Panel, use Control Panel > Security > Certificates.

Duplicate general certificates

1. In the "CA Configuration" tab, open a device that has a general certificate.
2. Right-click the certificate and select "Duplicate ...".
3. The "Duplicate certificate" dialog opens.
4. Edit the properties of the new general certificate as needed.
5. Click "OK".

Export public key

1. In the Certificate Manager, right-click the general certificate and select "Export certificate ...". The "Export certificate" dialog opens.
   The "Export with private key" option is disabled.
2. Determine the file format of the public key to be used for the export. Activate one of the following options for this:
   - "Export public certificate in DER format"
   - "Export public certificate in PEM format"
3. Click "Export".
4. Select the storage location and confirm your entry.

4.7.6 Improvements in Update 1 Service Release 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.

Screen keyboard in Runtime

Improved user experience when entering via the on-screen keyboard, e.g. when editing IO fields.

Zooming and scrolling in Runtime

Improved behavior when zooming and scrolling in Runtime. If an image contains faceplates that belong to a group, the faceplates are displayed until they are no longer part of the visible area.

Screen objects with Quality Code "Bad" in Runtime

Some screen objects, e.g. IO fields, visualize in Runtime with an exclamation mark in a yellow triangle if their quality code or the quality code of the tags linked to them has the value "Bad".

In rare cases, this visualization was incorrectly displayed in Runtime. This error has been fixed.

Reports

The layout of reports whose report templates have single value segments has been improved. If border settings have been made in the report template for a single value segment, the layout of the report generated in Runtime is identical to that of the report template.

User interface language after refreshing the browser session

When refreshing the browser session, texts and graphics in Runtime are now reliably displayed in the correct language.

Subscribed PLC tags

The subscription of PLC tags was improved. Changes to the tags are now forwarded reliably to the HMI device even if only limited free resources are still available on the PLC.

4.7.7 Improvements in Update 1 Service Release 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.

4.7.8 Improvements in Update 1

4.7.8.1 General improvements

This update contains the following improvements and changes:

Stability and performance

The stability and performance have been improved based on the feedback received and other factors.

Faceplates

Faceplates opened as a pop-up that enter the visible area due to changing the display in Runtime, e.g. enlarging the window, are now displayed.

Trend control

The display of trends whose visibility is dynamized in runtime has been improved.

Alarm control

In alarms triggered by the "CreateSystemAlarm" system function, the alarm texts passed during the function call are displayed correctly in the alarm text column, regardless of which runtime language is set.

Reporting

If you configure a Unified PC in TIA Portal and select the value "Default" for the reporting database and the local main storage location, runtime uses the default storage locations configured during the runtime installation or later in WinCC Unified Configuration Manager.

The correct default storage location is now also used in the following cases:

- After loading a Unified PC with configured Runtime version V17 on a PC with Runtime version V18 Update 1 installed
- After upgrading a Unified PC to V18 Update 1

System diagnostics control

The display of hardware details in the matrix view for each port has been improved.

Display of the alarm control in the simulation

The display of the alarm control configured as an alarm line in the simulation has been improved, i.e. adapted to the display on the Panel.

PaCo

Process diagnostics

The display of the sequencer during the jump from the GRAPH overview to the PLC code view has been improved.

The jump via the system function "OpenPlcCodeViewFromAlarm" into the corresponding GRAPH sequence has been improved.

When switching to the transition details in the "PLC code view" and "GRAPH overview" objects, the details are also updated after 3 minutes.

The objects of the process diagnostics indicate the correct status of the PLC.

Switch

The behavior of the switch when the status is dynamized via PLC tags has been improved.

4.7.8.2 GraphQL

WebSocket protocol for subscriptions

Subscription of alarms and tags with GraphQL requires the WebSocket protocol.

The WebSocket protocol is not activated by WinCC Unified Setup. Activate the WebSocket protocol manually: "Enable or Disable Windows Features > Internet Information Services > WWW Services > Application Development Features > WebSocket Protocol".

Escaping

Attribute values and object names, for example of tags or alarms, may contain special characters which are escape sequences in the Runtime system or the programming language of the GraphQL client. Escape sequences do not represent a text but start a special function during the program execution.

To ensure that a special character is interpreted as a normal character, prefix the character in the GraphQL client program code with a masking character (EN: Escaping).

Note

Masking character

Runtime system: $

Apollo Studio: \

If a special character is an escape sequence in the Runtime system and the programming language, combine the masking characters.

Example

The character " is an escape sequence in the Runtime system and Apollo Studio. To, for example, address a tag with the name `MOT1"` enter the following string: `MOT1$\"`

Structure of the server response

The attributes delivered in the server response have the same sequence as in the selection set of the client query.

Subscription of tags during the delta download

If a GraphQL client subscribes to two tags and their tag names are renamed in a delta download such that the tags swap their names, the subscription is now executed further.

Security through access control

The access of GraphQL clients to Runtime can be restricted as follows:

- Linking access to function rights
  An operation of the GraphQL client is only executed if the user who is logged on at the client has the required rights.
  Reading rights are required for querying and subscriptions, and writing rights for mutations.
- Controlling access to the object level
  The read access and write access of the user logged on at the GraphQL client is defined per object:
  - Read access to an object without authorization: The object is removed from the server response.
  - Write access to an object without authorization: The operation is aborted.

Acknowledging and resetting alarms

You have the following options:

- Acknowledging or resetting all active alarms of one or more configured alarms.
- Acknowledging or resetting specific alarm instances of one or more configured alarms.

Note

Alarms without group acknowledgment or group reset

The configuration of a configured alarm can prevent a group acknowledgment or group reset. In this case you have to acknowledge or reset each alarm instance in an own operation call.

The execution of `acknowledgeAlarms` and `resetAlarms` aborts when the operation for two or more configured alarms is called and one of the alarms does not allow group acknowledgment or group reset.

Requirement

- The user who is logged in to Runtime for the GraphQL client has the "GraphQL - read/write access" right in Runtime.
- The state machine of the alarms specified in the `input` parameter requires acknowledgement or acknowledgement and confirmation of the alarms.

Description "acknowledgeAlarms" and "resetAlarms"

```
acknowledgeAlarms(
      input: [AlarmIdentifierInput]
    ): [ActiveAlarm]
resetAlarms(
      input: [AlarmIdentifierInput]
    ): [ActiveAlarm]
```

Operation name	`acknowledgeAlarms`	`resetAlarms`
Operation type	`mutation`	
Function	Acknowledges the active alarms specified in the input parameter `input`.	Resets the alarms specified in the input parameter `input` .
Input parameters	`input`: • Mandatory parameters • Data type: `[AlarmIdentifierInput]` • Specifies the alarms to be acknowledged or reset	
Selection set	Mandatory specification Specify which attributes the server returns for the queried alarms. You can request the attributes defined in the `ActiveAlarm` type.	

Server response	Supplies the attributes requested in the selection set for the alarms as key-value pairs of a JSON data record.
Error messages (`code` and `description`)	• `0: Success` • `2: Cannot resolve provided name` • `304: Invalid object state` • `305: The alarm cannot be read / acknowledged / reset in current state` • `x: Alarm instance does not exist`

Data type "AlarmIdentifierInput"

The data type has the following attributes:

- `name`
  - Mandatory specification
  - The fully qualified name of a configured alarm
    Alarm of a tag: <System name>::<Tag name>:<Alarm name>
    Alarm of an element of a structure tag or array: <System name>::<Tag name>.<Element path>:<Alarm name>
    Delimiter for the components of the element path: "."
  - Data type: `String`
- `instanceID`
  - Optional
  - The ID of an alarm instance of the configured alarm
  - If "0" is transferred as the `instanceID` or if no `instanceID` is transferred, all active alarms of the configured alarm are acknowledged.

Enabling and disabling alarms

You have the following options:

- Disabling one or more configured alarms
  The alarm condition of these alarms is no longer checked. No new alarm instances occur.
- Enabling one or more disabled configured alarms
  The alarm condition of these alarms is checked again. New alarm instances occur again.

Requirement

- The user who is logged in to Runtime for the GraphQL client has the "GraphQL - read/write access" right in Runtime.

Description "disableAlarms" and "enableAlarms"

```
disableAlarms(
     names: [String]
   ): [AlarmMutationResult]
enableAlarms(
     names: [String]
   ): [AlarmMutationResult]
```

Operation name	`disableAlarms`	`enableAlarms`
Operation type	`mutation`	
Function	Disables the alarms specified in the input parameter `names`.	Enables the alarms specified in the input parameter `names`.
Input parameters	`names`: • Mandatory parameters • Data type: `[String]` • The fully qualified name of one or more configured alarms. The alarms are disabled or enabled. Detailed information on how to specify the fully qualified name of a configured alarm, is available further up in the section on acknowledging and resetting of alarms > Data type "AlarmIdentifierInput".	
Selection set	Mandatory specification Specify which attributes the server returns for the queried alarms. You can request the attributes defined in the `AlarmMutationResult` type.	
Server response	Supplies the attributes requested in the selection set for the alarms as key-value pairs of a JSON data record.	
Error messages (`code` and `description`)	• `0: Success` • `2: Cannot resolve provided name`	

Data type "AlarmMutationResult"

The data type has the following attributes:

- `alarmName`
  - The fully qualified name of the configured alarm
    Detailed information on how to specify the fully qualified name of a configured alarm, is available further up in the section on acknowledging and resetting of alarms > Data type "AlarmIdentifierInput".
  - Data type: `String`
- `error`
  - Feedback on the success of the operation
  - Data type: `Error`

Shelving alarms and canceling the shelving

Description "shelveAlarms“

```
shelveAlarms(
      names: [String]
      shelveTimeout: Timespan
    ): [AlarmMutationResult]
unshelveAlarms(

      names: [String]

    ): [AlarmMutationResult]
```

Operation name	`shelveAlarms`	`unshelveAlarms`
Operation type	`mutation`	
Function	Shelves the alarms. The attribute `suppressionState` of the alarms is set to `0x2 Shelved`. If the GraphQL client has subscribed to one of the shelved alarms, the client receives a notification on the shelving. The shelved alarms are still available and logged in the system. If the Graph QL client has subscribed a shelved alarm, it keeps receiving notifications on changes at the alarm from the Runtime system. The implementation of the GraphQL client controls how the client: • Deals with notifications about subscribed shelved alarms, for example. whether to suppress them. • Deals with operation calls that include shelved alarms, for example whether to disallow read access to these alarms.	Cancels the shelving of the alarms again. This creates a log entry.
Input parameters	`names`: • Mandatory parameters • Data type: `[String]` • The fully qualified name of one or more configured alarms. The active alarm instances of these alarms are shelved or their shelving is canceled. Detailed information on how to specify the fully qualified name of a configured alarm, is available further up in the section on acknowledging and resetting of alarms > Data type "AlarmIdentifierInput".	
	`shelveTimeout`: • Optional • Time interval after which the shelving of the alarms is automatically canceled. Must not be greater than the timeout configured in Runtime. If no value is transferred, the timeout configured for Runtime is used. • Data type: Timespan	-
Selection set	Mandatory specification Specify which attributes the server returns for the queried alarms. You can request the attributes defined in the `AlarmMutationResult` type. Information on the type can be found further above.	
Server response	Supplies the attributes requested in the selection set for the alarms as key-value pairs of a JSON data record.	
Error messages (`code` and `description`)	• `0: Success` • `2: Cannot resolve provided name`	

Subscribing to the redundancy status of the host

Requirement

- The user who is logged in to Runtime for the GraphQL client has "GraphQL - read access" rights or "GraphQL - read/write access" rights in Runtime.

Description "reduState“

Operation name	`reduState`
Operation type	`subscription`
Function	Subscribes to the redundancy status of the host to which the connected GraphQL server belongs, in a redundant system. Subscribes to the redundancy status of the host connected with the GraphQL client in a redundant system.
Input parameters	-
Selection set	Mandatory specification Specify which attributes the server returns for the queried alarms. You can request the attributes defined in the `ReduStateNotification` type.
Server response	Supplies the attributes requested in the selection as key-value pairs of a JSON data record.

Note

Passive redundancy status

If the GraphQL client receives a notification that the status is passive, log off the client from the connected GraphQL server. Connect the client with the GraphQL server of the active host.

Type "ReduStateNotification" and "ReduStateValue"

The `ReduStateNotification` type has the following attributes:

`value`

- Data type: `ReduStateValue`

`notificationReason`

- Data type: `String`

The `ReduStateValue` type has the following attributes:

- `value`:
  The redundancy status as defined in the enumeration `ReduState`:
  - `ACTIVE`
    The host of the GraphQL server currently connected with the GraphQL client is active.
  - `PASSIVE`
    The host of the GraphQL server currently connected with the GraphQL client is passive.
- `timestamp`:
  - Data type: `Timestamp`

4.7.9 Improvements in Service Release 1

This update contains the following improvements and changes:

Stability and performance

The stability and performance have been improved based, among other things, on the feedback received.

Assigning text lists and graphics lists for reports

In a report template, when you map a text list or graphics list to the column of a data source item, the list values are now read correctly both in the add-in and when the report is generated.

For more information on this, refer to the user help on the Excel add-in under the keyword "Assigning text lists and graphic lists".

Symbolic I/O field in the "Output" mode

If a symbolic I/O field is linked to a resource list in "Output" mode, the applicable list entry is displayed.

Loading from WinCC Unified Online Engineering

Stability of loading from WinCC Unified Online Engineering has been improved.

System tag "@CurrentLanguage"

The value of the system variable ""@CurrentLanguage is changed correctly even after a delta load when changing the Runtime language.

Contexts in the PI Option "Performance Insight"

Stability of archiving of PFI contexts has been improved:

- A memory leak has been corrected.
- Stability of context archiving after loading has been improved:

Error output

Crash in error output when accessing non-existent variables of a faceplate has been corrected.

Updating the browser

Stability on updating the browser has been improved.

4.8 Unified Comfort Panel

4.8.1 Network settings

Network settings

The following table shows the network ports used by Unified Comfort Panel for internal and external communication. These ports must not be used for any other purpose.

Unified Comfort Panel		
Name	Port number	Transport protocol
HmiRuntime	1234	TCP
HmiRuntime	1235	TCP
HmiRuntime	1344	TCP
HmiRuntime	4700	TCP
HmiRuntime	4701	TCP
HmiRuntime	4776	TCP
HmiRuntime	4777	TCP
HmiRuntime	4778	TCP
HmiRuntime	4999	TCP
HmiRuntime	5678	TCP
Snmpd	162	TCP
FwPnManager	34964	UDP

4.8.2 Important notes

This section contains important information about product properties.

Configuring connections

For the Unified Comfort Panel in the engineering system, only configure control connections that are also available and used in plant operation.

IP addresses

Regardless of whether SIMATIC Edge has been activated on the HMI device or not, the IP subnet 172.17.0.0/16 is reserved for SIMATIC Edge communication. This IP address range must not be used for general network communication.

Operating system downgrade and "Alarm persistency"

The following applies up to including HMI device image 18.0.0.4: If you perform an operating system downgrade to a lower major version (e.g. V18 to V17) and "Alarm persistency" is enabled, Runtime may not be able to start after the downgrade.

Proceed as follows for an operating system downgrade:

1. Under "Runtime Properties" > "Alarm persistency", deselect the "Enable alarm persistency" option.
2. Perform the operating system downgrade.
3. Activate the "Enable alarm persistency" option again.

"System Properties" > "Event Logger"

Only enable the Event Logger for a short period of time, as a large amount of data is recorded on the storage medium. If the remaining memory on the storage medium is greatly reduced, this can affect other processes that use the storage medium, e.g. alarm logging.

Important notes on storage media

Loading V18 Update 4 projects from external storage media

If you load a project created with V18 Update 4 (WinCC Unified) in the Control Panel via "Runtime Properties" > "Load project from storage", then the following applies: In the "Projects on external storage" list and in the "Project details" dialog, the "18.0.0.3" version is displayed under "RT Version".

Executing scripts

The execution of scripts from an external storage medium via the "StartProgram" system function is not permitted.

Ejecting a storage medium

A storage medium can only be ejected safely via the system function "EjectStorageMedium" when the storage medium is not being accessed. Before calling up "EjectStorageMedium" ensure that no data transfer is taking place and that the storage medium is not being used by a function such as the "Trace Logger".

Operating system downgrade and alarm logging

Alarm logs created with a higher HMI device image version cannot be read or updated with a lower HMI device image version.

Example: Alarm logs that have been created with HMI device image V18.0.0.3 cannot be loaded with HMI device image V18.0.0.1.

In this case, the alarm control displays an error message regarding the incompatibility between database version and Runtime version.

After downgrading, use an empty storage medium for alarm logging.

Status messages under "Network drive"

In the Control Panel of the HMI device, you manage a network drive that the HMI device can access under "Network and Internet" > "Network drive". The "Status" column of a network drive contains information about the connection status of the network drive.

The following table shows possible status messages, their meaning and possible solutions in the event of errors.

Status message	Meaning	Solution
Connecting	The connection to the network drive is established.	-
Connected	The network drive has been successfully connected.	-
No such file or directory	The path specified under "Network Path" does not exist.	Make sure that the specified network path exists and check that the network path is entered correctly in the "Network Path" input field.
Authentication failed	The credentials are not correct.	Make sure that the specified user has access to the network drive. Check the spelling in the "Username" and "Password" input fields.
Input/Output error	The network drive cannot be connected.	Check the connection between the PC and the HMI device. Re-establish the connection to the network drive.
Inactive	Appears after an operating system update because this process resets credentials for security reasons.	Re-enter the credentials "Username" and "Password" for the network drive.
Failed	Is displayed when sharing of the network drive on the server PC has been terminated.	On the server PC, check the network drive sharing settings and user access authorizations.
Timeout	There are synchronization problems with the added network drive.	Check the connection between the PC and the HMI device. Try reconnecting the network drive using "Edit" and "OK".

Notes on the "Edit user" dialog with image version 18.0.0.0

If you are using an HMI device image version 18.0.0.0 or higher, then observe the following information regarding the "Edit user" dialog of the local user management.

Cancel RFID assignment process

If you edit the RFID assignment of a user via the "Edit user" dialog and cancel the subsequent assignment process via the "Cancel" button in one of the dialogs, the entries in the user list may not be displayed correctly.
To update the list, select another entry in the navigation area of the Control Panel and then again "Security" > "User management".

RFID activation or PIN change logs the user in

In the following cases, the selected user is logged in to the "Edit user" dialog immediately after the change operation:

- You have switched the "Enable authentication via RFID card" option from "disabled" to "enabled".
- You have switched the "PIN required for authentication with RFID card" option.

PIN dialog

In the following cases, the PIN dialog is displayed again after editing a user via the "Edit user" dialog.

- You have switched the "Enable authentication via RFID card" option from "enabled" to "disabled".
- You have switched the "PIN required for authentication with RFID card" option.

In this case, close the PIN dialog via the "Cancel" button.

Notes on the dialogs "Edit user" and "Add user" as of image version 18.0.0.1

If you are using an HMI device image version 18.0.0.1 or higher, then observe the following information regarding the "Edit user" and "Add user" dialogs of the local user management.

Cancel RFID assignment process

If you edit the RFID assignment of a user via the "Edit user" dialog and cancel the subsequent assignment process via the "Cancel" button in one of the dialogs, the entries in the user list may not be displayed correctly.
To update the list, select another entry in the navigation area of the Control Panel and then again "Security" > "User management".

When you assign a user an RFID login via the "Edit user" or "Add user" dialog, the "RFID assignment – Please hold RFID Card on connected Card reader" dialog is displayed with the "OK" and "Cancel" buttons. You start the RFID assignment using the "OK" button, you cancel the assignment with "Cancel". Depending on the dialog via which the assignment was started, the "Cancel" function behaves as follows:

- Assignment was started via "Edit user": "Cancel" closes the open dialog.
  Result: You are back in the "Edit user" dialog and can make additional changes.
- Assignment was started via "Add user": "Cancel" closes the open dialog and the "Add user" dialog.
  Result: You are back in the user list. The user was created without RFID login.

RFID activation or PIN change logs the user in

In the following cases, the selected user is logged in to the "Edit user" dialog immediately after the change operation:

- The "Enable authentication via RFID card" option is already enabled for this user and you have enabled the "PIN required for authentication with RFID card" option.
- The "Enable authentication via RFID card" option is already enabled for this user and you have disabled the "PIN required for authentication with RFID card" option or changed the PIN of the user. In this case, the PIN dialog is displayed again. Entering the PIN of the user and pressing "OK" logs the user in; pressing "Cancel" does not log the user in.

Entering PIN immediately with PIN activation

If you select the "PIN required for authentication with RFID card" option for a user, enter a PIN in the "PIN" text box before pressing the "Edit user" or "Add user" button.

Editing data with PIN already assigned

If you want to edit the data of a user, such as the comment, and the "PIN required for authentication with RFID card" option is enabled for this user, the PIN must also be reassigned as part of the change. To keep the previous PIN of the user, you can enter the previous PIN again.

Network settings and "Restore"

Please note that the network settings of the HMI device such as the IP address can be overwritten if a backup with different network settings is loaded into the HMI device, e.g. via the "Restore" function or by inserting a system memory card that has been used for "automatic backup".

NTP server as of image version 18.0.0.2

The NTP server settings are deleted when HMI device image version ≤18.0.0.1 is updated to HMI device image version ≥18.0.0.2.

If you use one or several NTP servers, note down - before updating the HMI device image - the NTP server settings and enter them again in the Control Panel under "Language, Region and Formats" > "Date and time" after performing the update.

NTP server - "Update rate"

As of HMI device image version 18.0.0.3, the value for the synchronization interval with an NTP server ("Update rate") is entered via a selection list.

Secure HMI communication

The Unified HMI devices support Secure HMI communication in conjunction with a controller that also supports Secure HMI communication.

As soon as the HMI device is connected to such a controller, secure HMI communication is **always** used, regardless of the connection mechanism configured for the controller in TIA Portal.

Starting Runtime

You can start Runtime directly after loading a project or via the "Start Runtime" button in the Control Panel.

If background processes are running on the HMI device and Runtime is started at the same time, the dialog "Runtime Start" is displayed with the error message "An error occured while starting project".

Acknowledge the dialog and restart Runtime after some time.

Browser download directory

On a Unified Comfort Panel, the browser download directory is: "/home/industrial/download"

Output directory for scripts in tasks

It is not permitted to write to the "home/industrial" directory via scripts in Scheduler tasks; use an external storage medium instead.

Using the central user management

The following sections contain important information on parameters of the "TIA User Management Component (UMC)".

Auto logoff time

The UMC parameter "Account Policy > Auto logoff time (minutes)" is not supported by Unified Comfort Panels. A user logged on to the Unified Comfort Panel must log off manually.

Must change Password

The UMC parameter "Status > Must change Password" is not supported by Unified Comfort Panels. Make sure that this option is disabled for all users of a Unified Comfort Panel.

Password duration (days)

An expired password cannot be changed on a Unified Comfort Panel. To log on a user whose password has expired, change the password directly in the "TIA User Management Component".

Resource-intensive SIMATIC Edge apps

The simultaneous operation of a runtime project and resource-intensive Edge apps can lead to performance losses.

Reduce the resource requirements of the apps as much as possible.

Notes on the apps under "Add-ons"

Restart the HMI device after switching over the display orientation

If you switch over the display orientation in the Control Panel under "System Properties" > "Display" > "Orientation" while one of the apps such as the Media Player is running on the HMI device, the content of the app may not be displayed correctly. To avoid this, restart the HMI device after switching the display orientation.

Playback quality in the media player

Depending on the load on the HMI device, the playback quality of videos in the "Media Player" app may vary. If the playback quality is inadequate, reduce the load on the HMI device as much as possible, e.g. by closing unnecessary apps.

"Plant overview" control for Unified Comfort Panel not supported

With version V18, the "Plant overview" control is supported only for Unified PC. If you use the control under Unified Comfort Panel, an error message is output during compilation. The control must be cleared before compiling.

Important notes on ProDiag

Performance in Runtime

ProDiag occupies additional resources on the HMI device. This can affect screen opening times and performance in Runtime, such as loading the alarm control.

PLC user program

The following restriction applies for HMI device image version ≤18.0.0.3:

If you use S (Set) and R (Reset) outputs with supervision in your PLC user program, then permanent malfunctions of the process diagnostics handling in the HMI device may occur. In this case, Runtime or the HMI device must be restarted.

To avoid malfunctions, do not use S (Set) and R (Reset) outputs with supervision in your PLC user program.

Notes on the "PLC code view" control

Use PLC code view for evaluation only

The PLC code view may only be used for evaluation, not in productive operation.

PLC code view style

The general Runtime setting "Dark style" is not suitable for the PLC code view. Choose a different style if you use the PLC code view object.

Notes on the "Media Player" control

Specification of the URL

In the "Media Player" control, you specify the URL for the desired file under "Properties > General".

To access a file, construct the URL according to the following scheme:
"file:///media/simatic/<storage location>/<file name>"
Example: "file:///media/simatic/X61/content/video.mp4"

Video formats

Video playback of .mp4 and .mkv files using the "Media player" control may result in performance decrease.

Use the .ogv or .webm formats instead.

Alarm control

Flashing on range violation

Flashing on range violation is not supported for the alarm control.

Scroll bars

Scroll bars are not available in the alarm control. Use the touchscreen to move the contents of the alarm control horizontally or vertically.

"Show recent" button

The "Show recent" function is only supported in conjunction with ascending sort order.

Moving columns

Moving columns within the alarm control is not supported.

Status bar

If a text was configured for the first element in the status line and an image for the second element, the image may not be displayed immediately after loading. In this case, perform a screen change.

Filter alarms

Multiple selection of filter criteria is not supported in the filter dialog of the alarm control.

Dynamize visibility of columns

The dynamization of the visibility of columns via a script or a system function is not supported.

Parameter set control

If a parameter set control view was maximized and again reduced, it may happen that the view is not properly displayed. Elements such as parameter set type number or parameter set number may not be visible. Resize the width of the view once to properly display its contents again.

Trend control buttons

The "Move trend area" and "Move axes area" buttons do not work with HMI device image version 18.0.0.2.
To move the axes, use the "Previous record"/"Next record" buttons or specify the desired start and end time with the "Select time range" button.

This limitation has been eliminated with HMI device image version 18.0.0.3 or higher.

Tag-related system functions at the "Press" and "Release" events

Affected system functions: "SetBitInTag"/"ResetBitInTag", "IncreaseTag"/"DecreaseTag", "SetTagValue"

If you have configured tag-related system functions on the "Press" and "Release" events of a button and the "Release event" follows the "Press" event in a period of less than 1 second, the

system function under "Release" may not be executed correctly. In this case, the affected tag value is not written to the controller.

To avoid this behavior, convert the tag-related system functions to the corresponding scripting functions using the "Convert function list to script" button ( ) and use the scripting function "Tags.Read" immediately after a write operation.

Example of "SetBitInTag"/"ResetBitInTag" at the "Press" and "Release" events:

Event "Press":

```
HMIRuntime.Tags.SysFct.SetBitInTag("<Tag_name>", 0);
```

```
Tags("<Tag_name>").Read(HMIRuntime.Tags.Enums.hmiReadType.hmiReadDirect);
```

Event "Release":

```
HMIRuntime.Tags.SysFct.ResetBitInTag("<Tag_name>", 0);
```

```
Tags("<Tag_name>").Read(HMIRuntime.Tags.Enums.hmiReadType.hmiReadDirect);
```

The example can be used in the same way for the other affected system functions.

Access to MS SQL and SQLite databases

In addition to Microsoft SQL, Unified Comfort Panels can also access SQLite databases. Databases must support the driver "Microsoft ODBC Driver 17 for SQL Server" of the version 17.9 for Microsoft SQL or "SQLite3" for SQLite.

System diagnostics

If you upgrade a project with a diagnostics indicator from WinCC (TIA Portal) V18, V18 Update 1 or V18 Update 2 to V18 Update 3, the diagnostics indicator is not visible on the HMI device.

Solution:

1. Copy the missing diagnostics indicator.
2. Compile the full project.
3. Download the full project.
4. After the full download, you can delete the copy of the diagnostics indicator.

System diagnostics control

The system diagnostics control is not supported in conjunction with an S7-1500R/H software controller or controller.

4.8.3 Improvements in V18 Upd. 3

This update contains the HMI device image version 18.0.0.3. To make use of the corresponding engineering and runtime improvements, we recommend using WinCC Unified V18 Update 3 for configuring the HMI devices.

Stability and performance

The stability and performance have been improved based, among other things, on the feedback received.

Diagnostics functions

The process diagnostics and system diagnostics functions for Unified PC are now also available for Unified Comfort Panels.

Control Panel

"Service and Commissioning" > "Trace forwarder"

Under "Trace forwarder" you can specify a storage medium and a path for saving "tracing" information in corresponding log files.

In addition to the information in the operating instructions, the following applies:

Log files on the selected storage medium

The log files with the "tracing" information are always saved in a subdirectory "/TraceLogs" on the selected storage medium.

- If no path is specified, then you will find the log files in the "/TraceLogs" directory.
- If a path is specified, then you will find the log files under "/<Path>/TraceLogs".

Names of the log files

The log files are named with date and time according to the following syntax: `TraceLogs-YYYY-MM-DD-T_HH_MM_SS.log`

SVG graphics

The display of SVG graphics has been improved.

4.8.4 Improvements in V18 Upd. 2

This update contains the HMI device image version 18.0.0.2. To make use of the corresponding engineering and runtime improvements, we recommend using WinCC Unified V18 Update 2 for configuring the HMI devices.

Stability and performance

The stability and performance have been improved based, among other things, on the feedback received.

4.8.5 Improvements in V18 Upd. 1

This update contains the HMI device image version 18.0.0.1. To make use of the corresponding engineering and runtime improvements, we recommend using WinCC Unified V18 Update 1 for configuring the HMI devices.

Stability and performance

The stability and performance have been improved based, among other things, on the feedback received.

Control Panel

"Apps" > "SIMATIC Apps" > "SIMATIC Extensions" removed

The "SIMATIC Extensions" app has been removed, as the associated functionality is now available in TIA Portal.

"Runtime Properties" > "Alarm buffer" renamed "Alarm persistency"

The "Alarm buffer" function has been renamed "Alarm persistency", since this function is used to enable or disable the retentivity of the alarm buffer rather than the alarm buffer itself.

The associated "Enable alarm buffer" option has been renamed "Enable alarm persistency".

Central user management - automatic logoff

The value "Maximum session timeout" in the user management of the HMI device indicates the number of minutes after which the user is automatically logged off if he does no longer perform any operator action.

This value can now also be set in the central user management via the parameter "Auto logoff time (minutes)".

Important: Without changing the default value under "Auto logoff time (minutes)", automatic logoff remains deactivated for the selected user. Change the default value when using the parameter for the first time.

Screen change

The behavior of the screen change in connection with large plant screens has been improved.

Representation of the alarm view in the simulation

In the simulation, the display of an alarm view configured as a message line was improved, i.e. adapted to the display on the Panel.

Number of login attempts

The number of attempts for the correct entry of the login data can be configured in the engineering under "Runtime settings > Security" as of WinCC Unified V18 Update 1.

4.9 Unified Basic Panel

4.9.1 Licensing

Licenses

The following table shows which licenses you can configure Unified Basic Panel:

Existing license	Devices that can be used						
	Unified Devices			Classic Devices			
	WinCC Unified PC	Comfort Panels	Basic Panels	RT Professional	RT Advanced	Comfort Panels	Basic Panels
WinCC Unified Basic ES**	No	No	Yes	No	No	No	Yes
WinCC Unified Comfort ES	No	Yes	Yes	No	No	Yes	Yes
WinCC Unified PC 10k ES	Yes (10k*)	Yes	Yes	No	Yes	Yes	Yes
WinCC Unified PC 100k ES	Yes (100k*)	Yes	Yes	Yes	Yes	Yes	Yes
WinCC Unified PC max ES	Yes	Yes	Yes	Yes	Yes	Yes	Yes
WinCC Basic	No	No	Yes	No	No	No	Yes
WinCC Comfort	No	Yes	Yes	No	No	Yes	Yes
WinCC Advanced	Yes (10k*)	Yes	Yes	No	Yes	Yes	Yes
WinCC Professional 512	Yes (10k*)	Yes	Yes	Yes (512*)	Yes	Yes	Yes
WinCC Professional 4096	Yes (10k*)	Yes	Yes	Yes (4096*)	Yes	Yes	Yes
WinCC Professional max	Yes (100k*)	Yes	Yes	Yes	Yes	Yes	Yes

* Maximum possible number of PowerTags

Validity of license keys for older versions of WinCC

With a valid License Key for WinCC V18.x, you can also operate older versions of WinCC without restrictions.

You can find more detailed information in the following table:

WinCC Engineering System

Edition	License	Valid for
WinCC Basic V18.x	WinCC Basic	• WinCC Basic V18.x • WinCC Basic V17.x • WinCC Basic V16.x • WinCC Basic V15.x • WinCC Basic V14.x • WinCC Basic V13.x • WinCC Basic V12.x • WinCC Basic V11.x • WinCC Unified Basic V18.x

4.9.2 General technical specifications

The following tables of performance features help you to assess whether your project conforms to the system limits of a given HMI device.

The specified maximum values are not additive. It cannot be guaranteed that configurations running on the devices at the full system limits will be functional.

Furthermore, the complexity of configuring the screens, such as the number of objects per screen, the number of tag connections, cycle times and scripts, has a significant influence on the open screen times and the performance in runtime.

In addition to the specified limits, allowances must be made for restrictions imposed by configuration memory resources.

Tags

	Unified Basic 4-12"
Number of tags in the project	1000
Number of elements per array	100

Alarms

	Unified Basic 4-12"
Number of alarm classes	32
Number of discrete alarms	2000
Number of analog alarms	100
Size of the alarm buffer [1)]	2000
Length of an alarm in characters	512
Number of alarm texts per alarm	10
Number of process values per alarm	10
Number of queued alarm events	64

	Unified Basic 4-12"
Number of controller alarms	160000
Number of OPC UA A&C alarms	20000

1) Corresponds to the number of all states of the messages of all configured alarm classes and includes the alarms of alarm classes which are not shown in an alarm control due to the configuration.

Number of alarms that can be displayed in an alarm control

The maximum number of alarms that can be displayed in runtime depends on the selected view.

	Unified Basic 4-12"
Show active alarms	2048
Show defined alarms	2048
Alarm statistics - view	2048
Show logged alarms	1000
Show and update logged alarms	100

Screens

	Unified Basic 4-12"
Maximum size in the Engineering System	20,000 * 20,000 pixels
Maximum size in runtime	20,000 * 20,000 pixels
Number of screens	300
Number of lower-level screen windows	10
Number of objects per screen	600
Number of objects from the "Controls" area per screen	5
Number of tags per screen	300

Parameter sets

	Unified Basic 4-12"
Number of parameter set types	250
Number of parameter set type elements	250
Number of parameter sets	250
Reserved memory for data records in the internal Flash	5 MB

Libraries

	Unified Basic 4-12"
Number of versions of dynamic SVGs	1000 with an average size of 10 KB

Logs

	Unified Basic 4-12"
Number of logs	10
Maximum size of a log	50 MB
Maximum size of a segment	50 MB
Number of logging tags:	SQLite: 50
Memory requirements of the data log	
Size of entry of logging tag	The size of the entry of a logging tag is largely determined by the data type. Depending on the data type, the following memory requirements apply: • 32-bit value, e.g. Bool, Int, LReal, ... : ~ 80 byte / entry • 64-bit value, e.g. LInt, DateTime, LTime, ... ~ 106 byte / entry • Text value (any length), e.g. WString, WChar: ~ 586 bytes/entry
Additional memory requirement of a segment:	SQLite: Approx. 0.5 MB
Memory requirements of the alarm log	
Basic entry in the alarm log without alarm text:	SQLite: Approx. 300 bytes
Memory requirement of the alarm text per character and language:	SQLite: at least 1 byte
Additional memory requirement per language (one-off):	SQLite: Approx. 100 bytes

Trends

	Unified Basic 4-12"
Number of trends	50
Number of trends per trend control	10
Number of trend areas per trend control	2

Text lists and graphics lists

	Unified Basic 4-12"
Number of graphics lists	100
Number of text lists	300
Number of entries per text or graphics list	250
Number of graphic objects	500
Number of text elements	2500

Scripts

	Unified Basic 4-12"
Number of scripts	50
Number of functions per function list	25

Scheduler

	Unified Basic 4-12"
Number of tasks, time- or event-triggered	10

Communication

	Unified Basic 4-12"
Number of S7 connections	8

Reporting

Reporting on Unified Basic Panels is currently not supported.

OPC UA

	Unified Basic 4-12"
Number of connected OPC UA clients	Unified Basic Panels can currently only be used as an OPC UA client
Maximum address length of OPC UA server variables for addressing by a Unified OPC UA Client	256 characters

Languages

	Unified Basic 4-12"
Number of runtime languages	32

User management

	Unified Basic 4-12"
Number of roles	50
Number of predefined function rights	20
Number of users	200

Project

	Unified Basic 4-12"
Size of the project files on the device	< 50 MB

4.9.3 Unsupported functions

The following tables show which functions are currently not supported on a Unified Basic Panel.

Screen objects

- f(x) trend control
- Trend companion
- Media player
- Custom Web Controls
- Plant overviews

Screen objects with limited functionality

In conjunction with HMI device image version 18.0.0.3, the following applies: The "Print" button is not supported for the trend control.

System functions

The following system functions can be configured in the engineering system, but are not supported by Unified Basic Panel in conjunction with HMI device image version 18.0.0.3.

- Create screenshot

Runtime functions

- Audit
- Reporting
- Runtime Collaboration

Connectivity

Unified Basic Panels can only be used as OPC UA clients and not as OPC UA servers.

Unified Basic Panels can only be used as SmartClient and not as SmartServer.

Notes on TIA Portal Openness

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This update contains the following improvements and changes:

Exporting and importing CAx data via TIA Portal Openness

In the documentation for TIA Portal Openness V18 it was announced that support for exporting/importing CAx data will be discontinued as of V19. Please note that with V19 only support for exporting/importing via command line is discontinued. Importing/exporting of CAx data via TIA Portal Openness will continue to be possible.

IO-Link port

As of TIA Portal V18 Update 2, the IO-Link port with the designation 'C/Q<n>' will be replaced. Here the port number is <n>. Example: Example: C/Q1, C/Q2

For AML replacement of the IO-Link configuration via S7-PCT as of TIA Portal V18 Update 2, use the version "S7-PCT 3.5 SP3 Update 3" or higher.

Creating objects for WinCC Unified devices

When creating objects in screens for WinCC Unified devices via TIA Portal Openness, the size and position specifications defined in a style are correctly taken into account.