Toolbox for HMI projects

SIMATIC STEP 7 Basic / Professional V15.1
SIMATIC WinCC Basic / Comfort / Advanced V15.1

https://support.industry.siemens.com/cs/ww/en/view/106226404

Siemens Industry Online Support

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Table of contents

1 Introduction

1.1 Overview

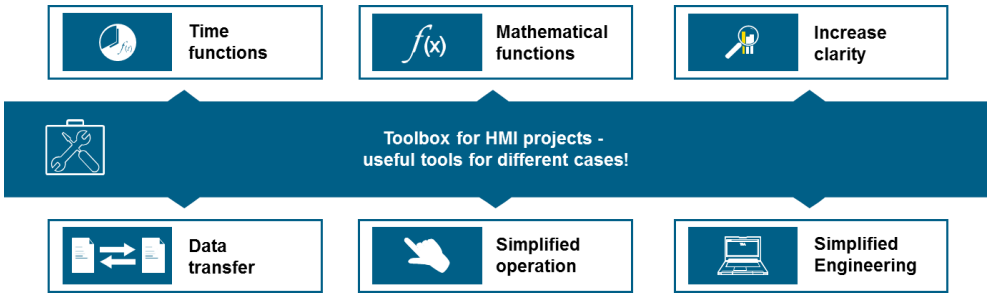
The HMI toolbox of Siemens Industry Online Support provides many useful tools that can clearly make every day work easier.

The different tools are available in global libraries and can thus be easily integrated in your visualization. This saves you valuable development time that you would have to invest in the development of your own tools.

In addition to the library "106226404_LHmiToolbox_WinCC_Comfort_Adv V15.1.zip", the application example offers you an example project "106226404_HmiToolbox_WinCC_Comfort_Adv_V15.1.zip" to become familiar with the tool and to test it.

This documentation provides a description of how to use the example project. It also explains the operating principle and procedure for integrating the tool into your own user project.

Figure 1-1



The HMI toolbox comprises tools for six different subject areas.

- Time functions – abbreviation "LHmiTime"
- Data transfer – abbreviation "LHmiData"
- Mathematical functions – abbreviation "LHmiMath"
- Simplified operation – abbreviation "LHmiOper"
- Increase clarity – abbreviation "LHmiView"
- Simplified engineering – abbreviation "LHmiEng"

In the sample project, you open each tool in the tool overview picture using its own button that is stored in the library. A text (tool name) and image (tool symbol) are visible on the button for the associated tool.

The following tables explain which text and which image is used for the individual tools.

"Time functions" subject area

Table 1-1

Name	Symbol	Description
Alarm		Alarm function
Calendar		Calendar function
Stopwatch		Stopwatch with five lap times
Timer		Timer function with five adjustable timers
Time switch		Time switch function with defined trigger bit
World clock		Option for integrating world clocks

"Data transfer" subject area

Table 1-2

Name	Symbol	Description
Chat		Chat function via http
Barcode		Using barcode fonts
QR Code		QR Code generator
Email		Manual and automatic sending of emails
Automatic data backup of files		Option for automatic data backup

"Mathematical functions" – subject area

Table 1-3

Name	Symbol	Description
Unit converter		Unit converter
Calculator		Windows-independent calculator

"Simplified operation" subject area

Table 1-4

Name	Symbol	Description
On-Screen Keyboard		Own on-screen keyboards
Home button		Button that distinguishes between short and long pressing and executes an event to match the pressing

Name	Symbol	Description
		duration
Individual screen saver Individual screen saver (solution 1)		Screen saver HMI-triggered
Individual screen saver Individual screen saver (solution 2)		Screen saver PLC-triggered
Check/radiobox		Check and radio boxes
Move Pop-up screens Move Pop-up screens		Option for moving pop-up screens in Runtime
Segmented control		Segmenting of tag values

"Increase clarity" subject area

Table 1-5

Name	Symbol	Description
Notes		Notes function during runtime
Gauge Controls for Basic Panels		Gauge control for Basic Panel
Gauge Controls for Comfort Panel /WinCC RT Advanced		Gauge control for Comfort Panels and WinCC RT Advanced
File explorer		Own file explorer, customizable
Table View for Logs		To display archives
Changing background by call of Pop-Up screens Changing background by call of Pop-Up screens		Hiding a background by call of pop-up screen
Waiting view		Waiting view for operators
Percentage view Percentage view		Display integer percentage values.
Bit monitor		Status display for 8, 16, and 32 bit value

"Simplified engineering" subject area

Table 1-6

Name	Symbol	Description
Rotation tool		PowerPoint Add-In Creating multiple rotating graphics from a graphic for integration into a graphic list
Siemens icon font		Font with typical and frequently used, graphical icons

Note

The HMI toolbox is available for a variety of HMI operator panels.

- Basic HMI (Key Panels, Basic Panels)
- Advanced HMI Panel-based (Comfort Panels, Comfort PRO Panels, Outdoor Panels, Mobile Panels)
- Advanced HMI PC-based (SIMATIC Panel PCs and Embedded Bundles with WinCC RT Advanced / Professional)

Due to the different hardware and software requirements, not all tools are available for all HMI operator panels or can only be operated on one HMI operator panel. In some cases a PLC is required in combination.

You should therefore note the hardware and software requirements at the beginning of each tool section.

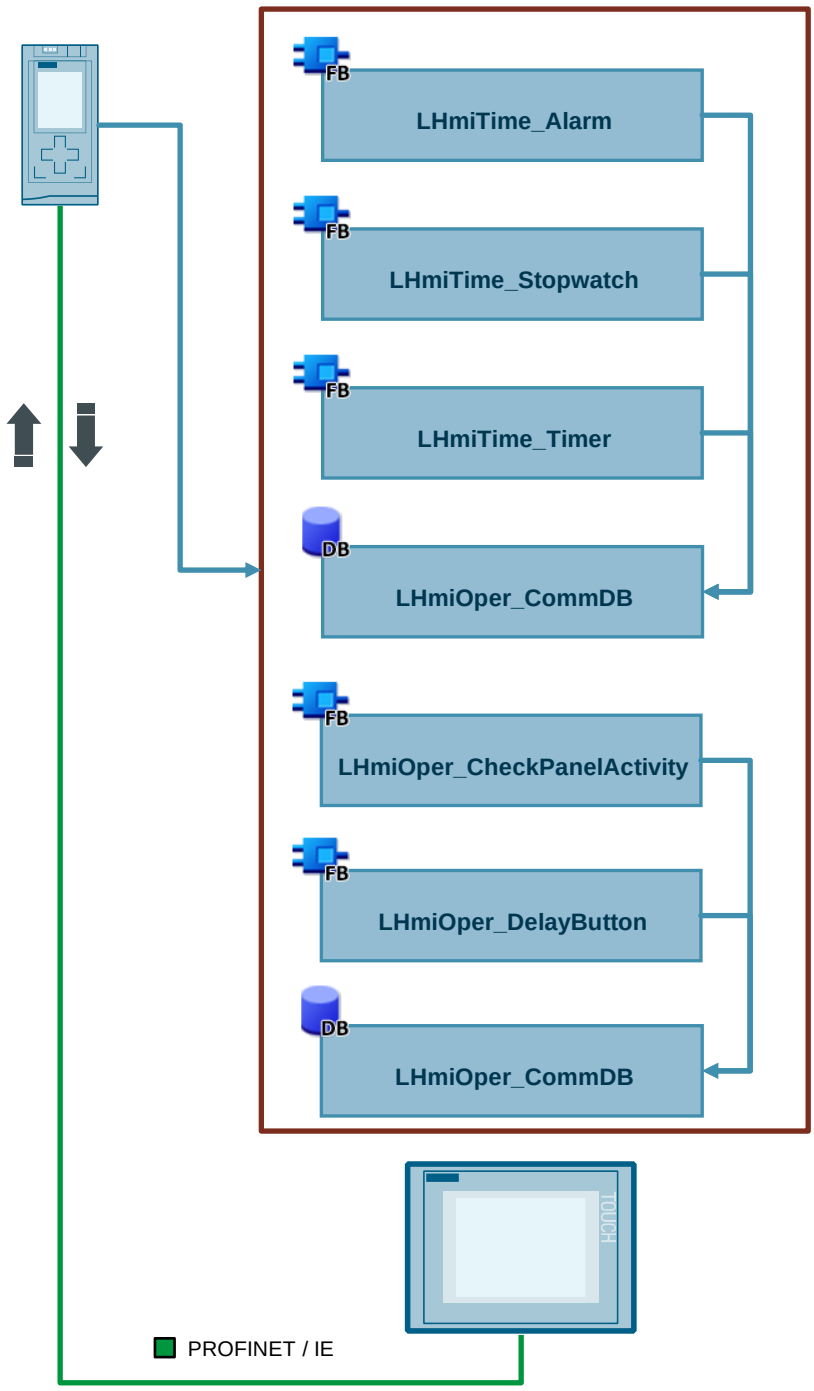
1.2 Principle of operation

Some tools only work in combination with a PLC. For these tools, the library contains function blocks and data blocks for the PLC.

The input and output data are stored in the communication data blocks "LHmiTime_CommDB" and "LHmiOper_CommDB".

The data blocks serve as interface to the HMI operator panel. You access this data via the HMI tags of the tools. Operation takes place via the HMI operator panel.

Figure 1-2



1.3 Components used

This application example was created with these hardware and software components:

Table 1-7

Component	Quantity	Article number	Note
S7-1516-3 PN/DP V2.5	1	6ES7 516-3AN01-0AB0	Other S7-1500 are also possible, FW ≥ V2.0
TP700 Comfort	1	6AV2 124-0JC01-0AX0	Other Comfort Panels ≥ 7" display size or PC station with WinCC RT Advanced ≥ V15.1 can also be used
STEP 7 Professional V15 / V15.1	1	6ES7822-1..05-..	Engineering license for STEP 7 Professional required
WinCC Engineering V15 / V15.1	1	6AV210.-....5-0	Engineering license for WinCC Advanced required
WinCC Runtime Advanced V15 / V15.1	1	6AV2104-....5-0	Comfort Panels ≥ 7" display size can also be used
Microsoft Power Point 2010	1		

This application example consists of the following components:

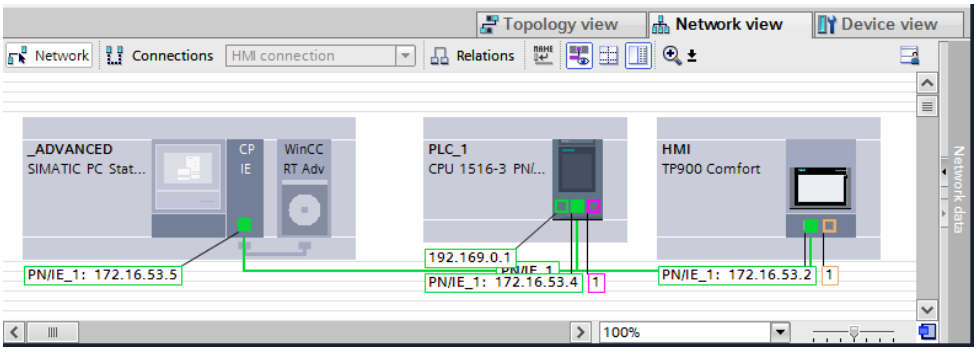
Table 1-8

Component	File name	Note
TIA Portal project	106226404_HmiToolbox_WinCC_Comfort_Adv_V15.1.zip	Created with V15.1
Library	106226404_LHmiToolbox_WinCC_Comfort_Adv V15.1.zip	Created with V15.1 for integration into your own project
Font	106226404_SiemensIconFont.zip	Symbol font of the Siemens AG
Power Point AddOn	106226404_RotationTool.zip	Tool for creating rotation graphics

2 Engineering

2.1 Hardware configuration of the example project

Figure 2-1



2.2 Project engineering / configuration

Note

For this section you need to download the project, unzip it and open it with the TIA Portal.

The project was developed with TIA Portal V15.1. You need STEP 7 Professional and WinCC Comfort / Advanced with the associated licenses to open and edit the project.

2.2.1 Adapting the hardware configuration

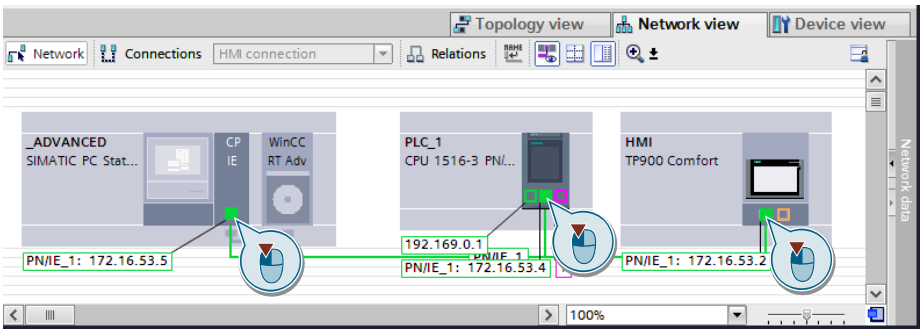
If you only want to simulate the configuration, go to section 2.2.4.

If you want to download the project to your hardware, you need to adapt the hardware configuration (IP address, PROFINET name, device type).

Adapting IP address and PROFINET name

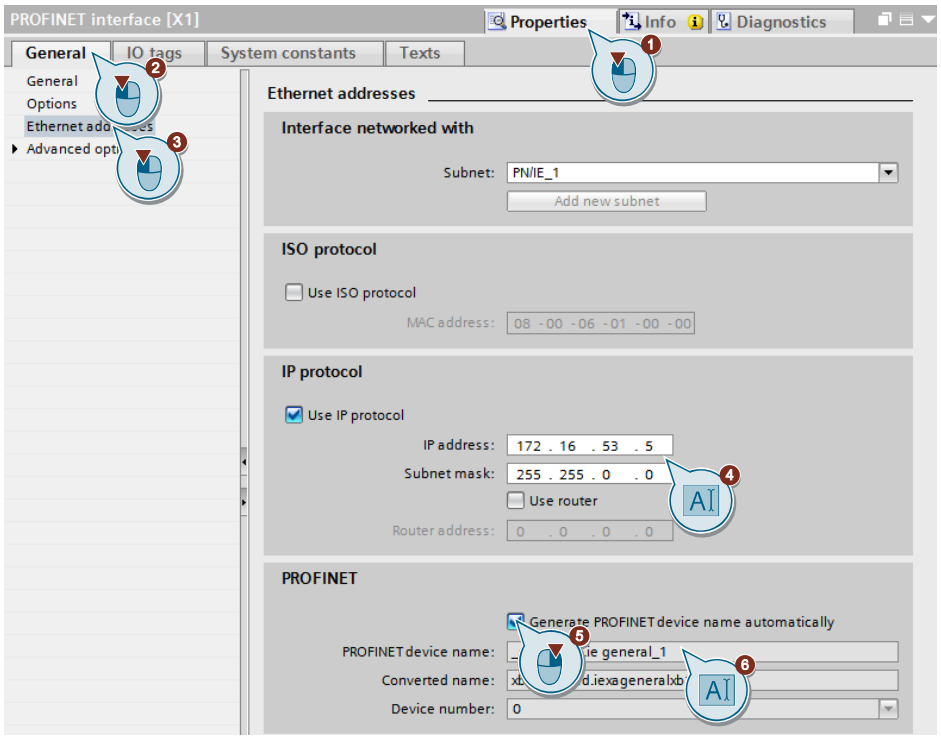
1. Open the graphical area of the network view with "Project tree > Devices & networks" > Network view".
2. Select the Ethernet port of the device.

   Figure 2-2



3. Open the settings of the PROFINET interface and change the IP address / PROFINET name to one of your choice.

   Figure 2-3

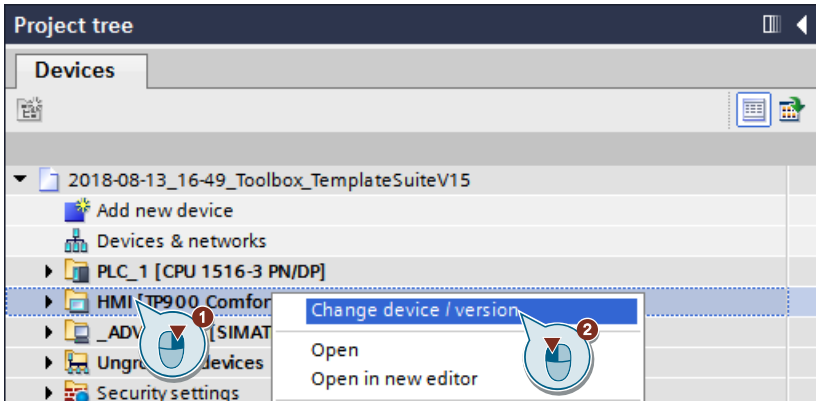


4. Repeat this step for the other devices. Make sure that all devices are located in the same IP address range.

Device replacement

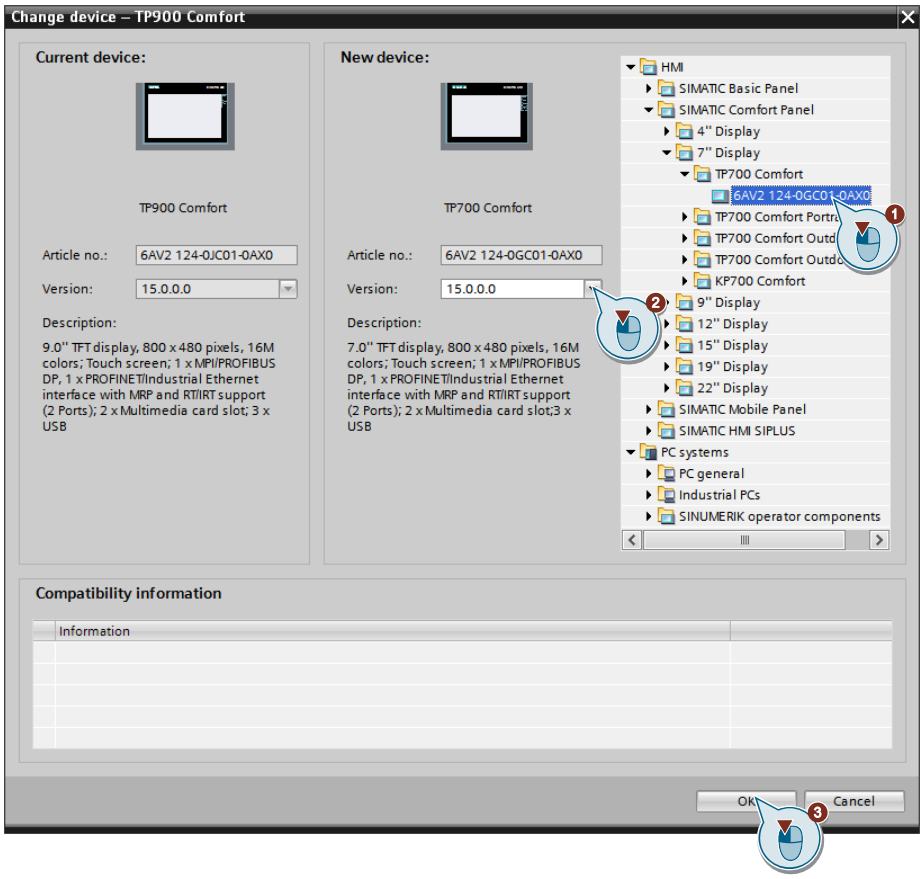
1. Open the settings for "Resize screen for device replacement" using the menu "Options > Settings > Visualization > Resize screen".
2. Specify the settings for screen resizing, position of objects in the screen as well as exemption rules for specific objects.
3. Open the shortcut menu of the device you want to replace by right clicking on it and click "Change device / version".
   ("Change device / version").

   Figure 2-4



4. The associated dialog window opens. Select an HMI operator panel with the firmware version of your choice, and confirm the entries with the "OK" button.

   Figure 2-5



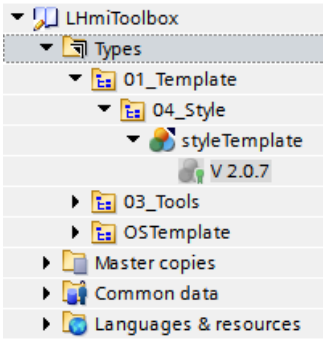
5. Check your screens and adjust any object shifts, if necessary.

2.2.2 Integrating style for toolbox

The screen objects of the tools use the "styleTemplate V2.0.7" style. To retain the style, you must apply this style to your configuration.

1. Open the "LHmiToolbox" library. There you will find the style.

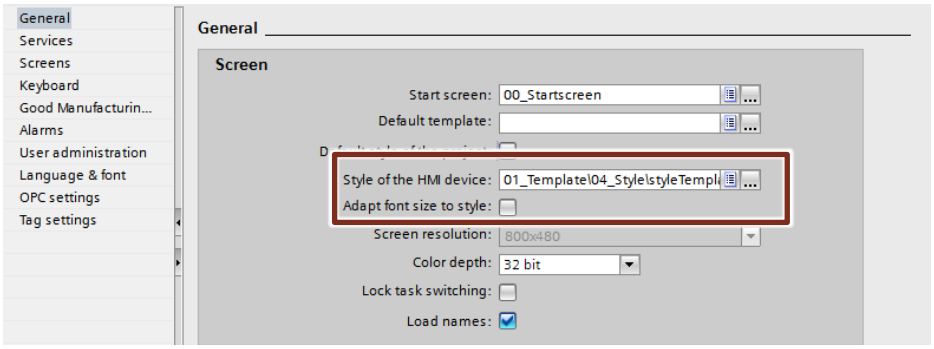
   Figure 2-6



2. Open the Runtime settings of your operator panel under "Project tree > Runtime settings".
3. Apply the style for your operator panel.

   Select the option "Adapt font size to style".

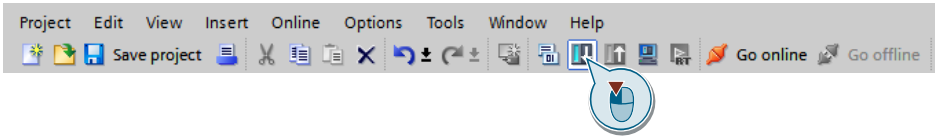
   Figure 2-7



2.2.3 Downloading project to devices

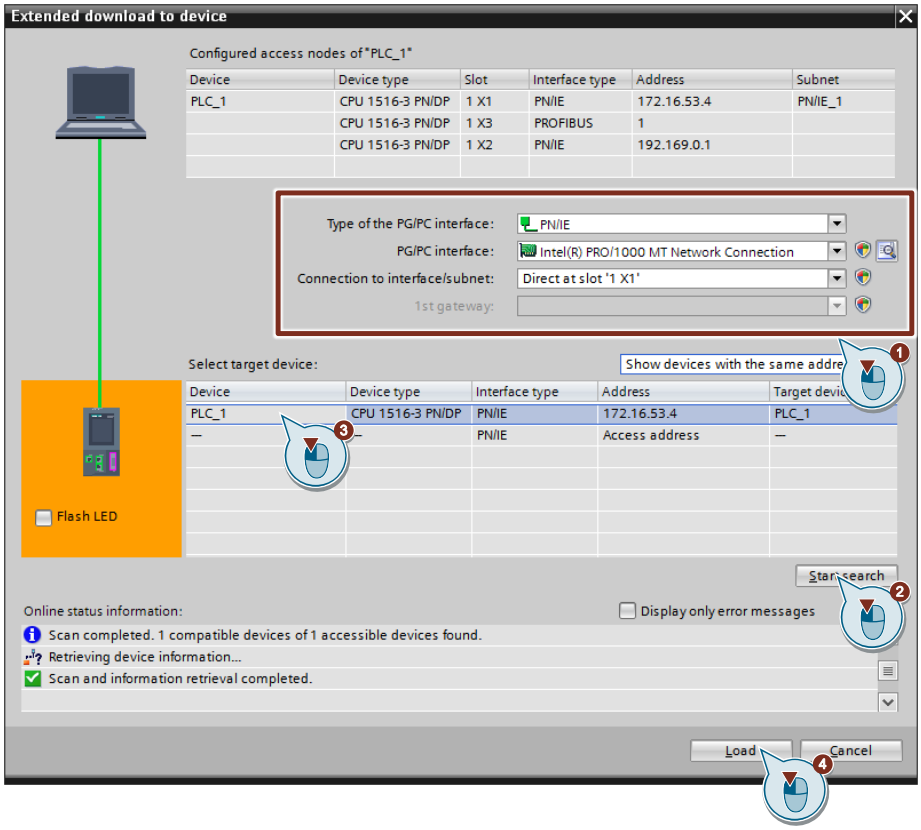
1. Select the PLC "PLC_1" in the "Project tree".
2. Download the hardware configuration and the software to the device with the "Download to device" button in the toolbar.

   Figure 2-8



3. Parameterize the "Extended download to device" dialog window:
   a. Setting the PG/PC interface settings
   b. Find the device with the "Start search" button.
   c. Select the device in the table of found devices.
   d. Confirm the dialog with the "Load" button.

   Figure 2-9



   When loading the panel, make sure that the type of the PG/PC interface in the dialog window matches the transfer channel setting ("Start Center Vxx.x.x.x> Settings > Transfer > Transfer Channel") on the panel.
4. Repeat the loading step for the remaining devices.

Note
The PC station with WinCC RT Advanced only contains the "Chat" tool to demonstrate the function. Alternatively, you can omit download of the PC station or start the simulation (section 2.2.4), if WinCC RT Advanced is not installed.

2.2.4 Simulating the project

Alternatively, you can also simulate the components to become familiar with the tools. To do so, you must have installed PLCSIM and the WinCC RT Advanced Simulator. These are often installed by default.

Note

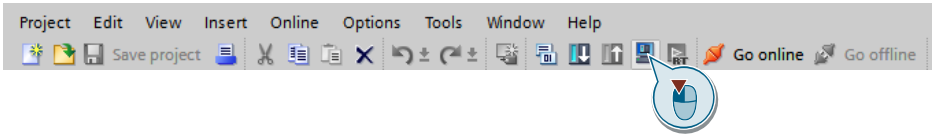
Note the following during simulation:

- A simulation is not suitable for permanent operation. For a simulation you download the hardware configuration and software to the associated devices.
- You can only simulate one HMI operator panel at one time.
- You can only simulate one PLC with PLCSIM.
- Basic / Comfort Panel are only simulated with the WinCC RT Advanced Simulator. This must be observed for data access via scripting.
  The programming of scripts with file access is designed so that the scripts automatically detect the operating system and adapt the file access.

Simulation of PLC with PLCSIM

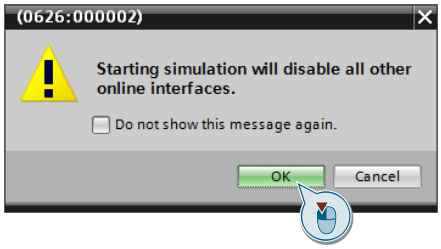
1. Select the PLC "PLC_1" in the "Project tree".
2. Start the simulation with the "Start simulation" button in the toolbar.

   Figure 2-10



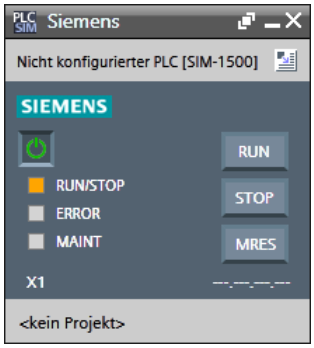
3. Confirm the warning dialog to disable all other interfaces during the simulation with the "OK" button.

   Figure 2-11



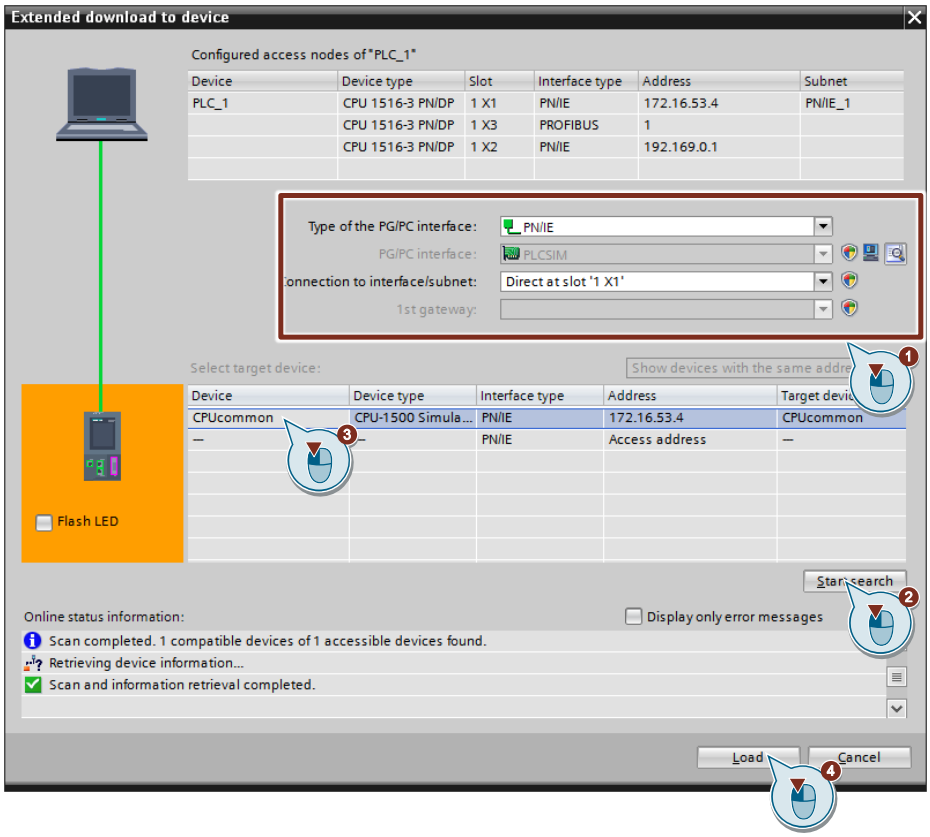
The PLCSIM and the "Extended download to device" dialog window opens.

Figure 2-12



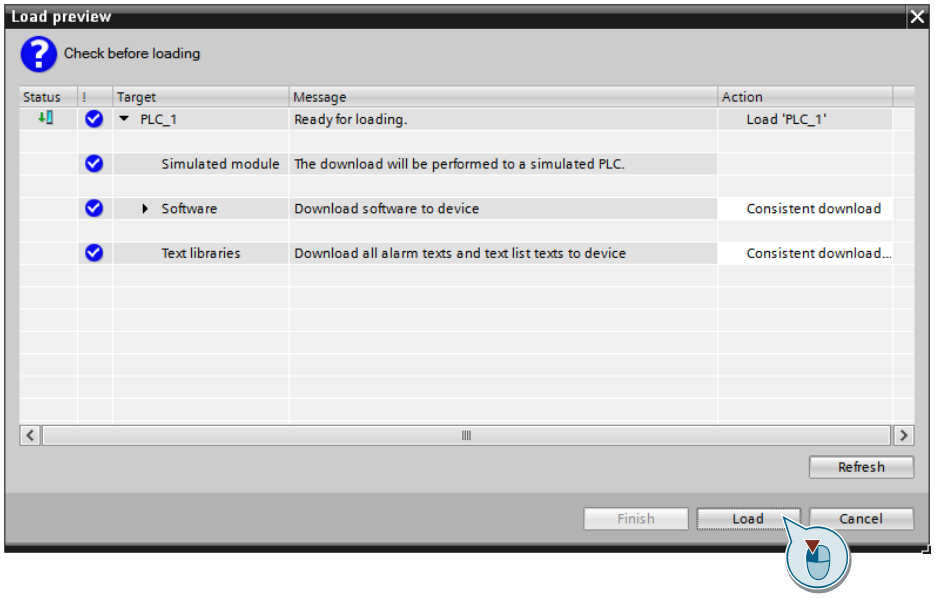
4. Parameterize the "Extended download to device" dialog window:
   a. Setting the PG/PC interface settings
   b. Search for the device with the "Start search" button.
   c. Select the device in the table of found devices.
   d. Confirm the settings with the "Load" button.

Figure 2-13



5. The "Load preview" dialog window opens.
   Use the "Load" button to download the hardware configuration and the software to the PLCSIM.

   Figure 2-14

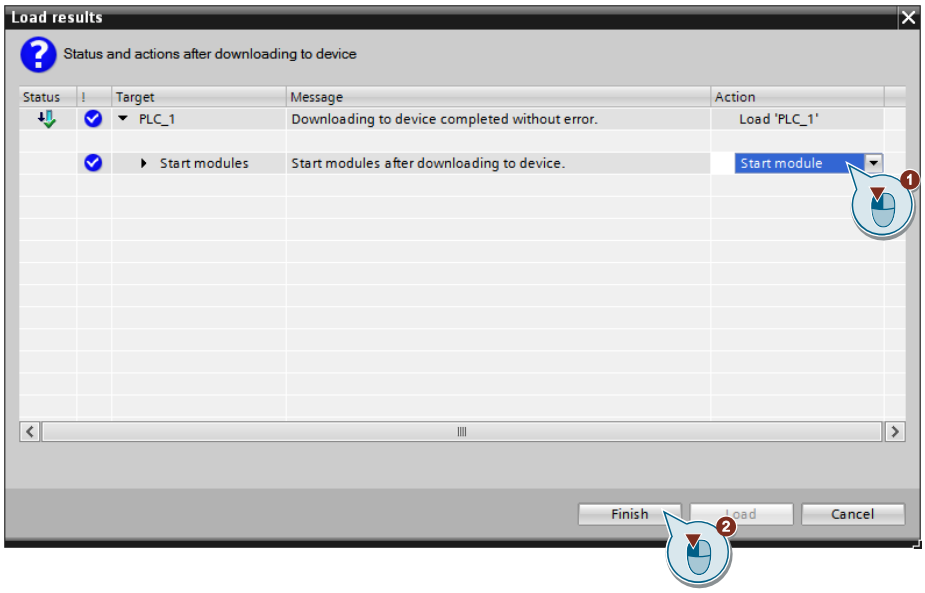


6. The "Load results" dialog window opens.

   Select the "Start module" option to set the PLC to "RUN" mode after the download.

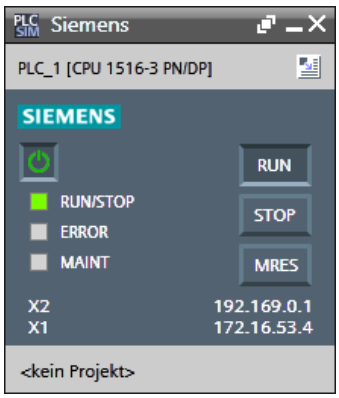
   Close the download with the "Finish" button.

   Figure 2-15



7. PLCSIM switches to "RUN" mode.
   You close the simulation with the "X" button of the PLCSIM.

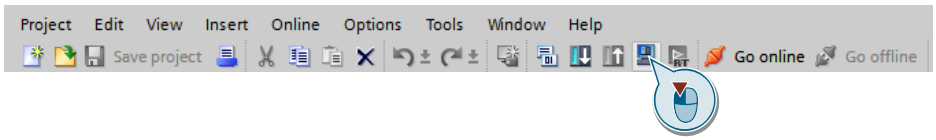
   Figure 2-16



Simulation of the HMI operator panel with WinCC RT Advanced Simulator

1. Select the HMI operator panel in the project tree.
2. Start the simulation with the "Start simulation" button in the toolbar.

   Figure 2-17

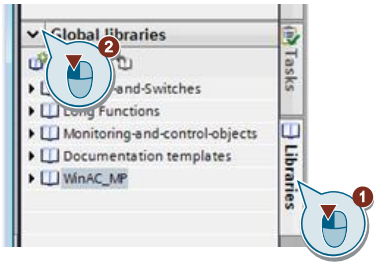


3. The simulation is started after successful compilation of the software. You close the simulation with the "X" button of the WinCC RT Advanced Simulator or in the "Settings" menu area.

2.3 Using the library

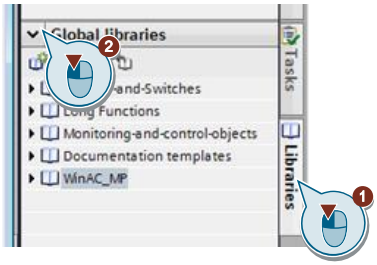
1. Download the library "106226404_LHmiToolbox_WinCC_Comfort_Adv V15.1.zip" and unzip the file.
2. Open your WinCC configuration.
3. Open the "Global libraries" pane in the "Libraries" task card.

   Figure 2-18



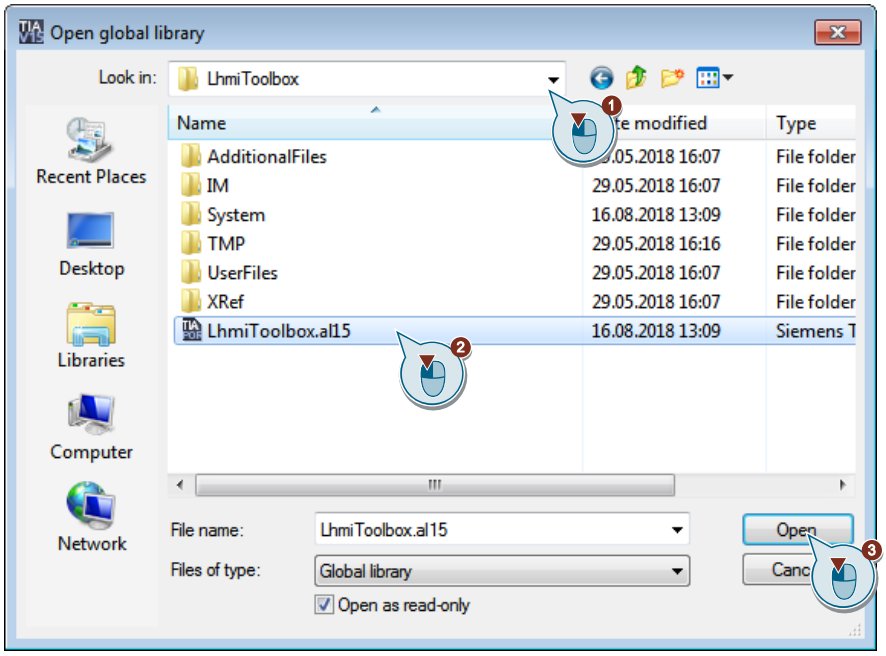
4. Open the library with the "Open global library".

   Figure 2-19



   Select the file "LHmiToolbox.al15" and open the library with the "Open" button. The library is now visible in the "Global libraries" pane.

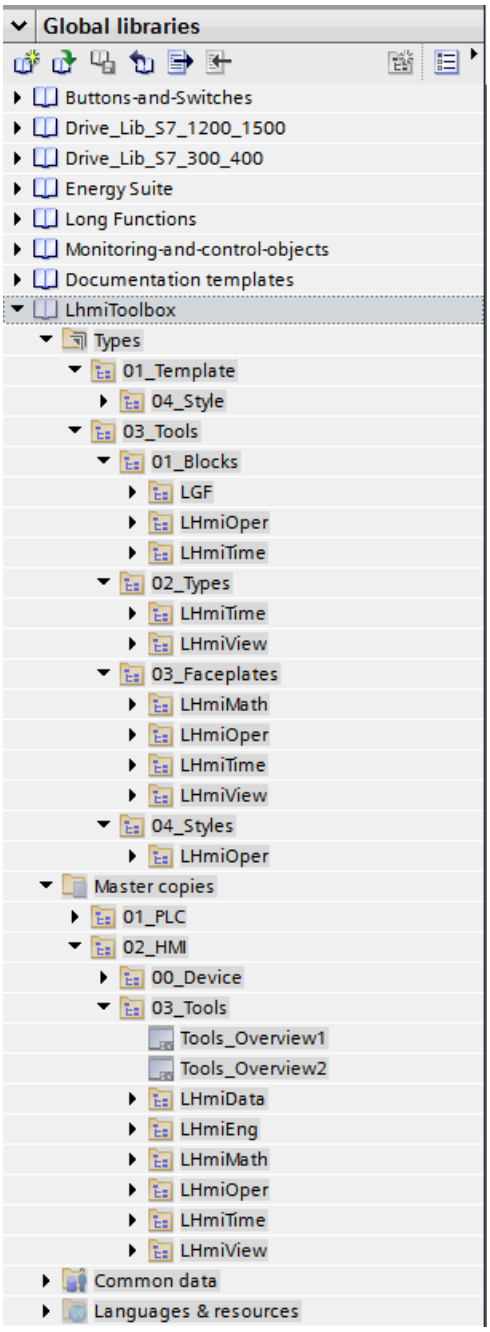
   Figure 2-20



5. You will find the types and objects of the individual tools sorted by subject area and tools.

Drag the types and objects to the associated structure of your configuration of the operator panel in the "Project tree".

Figure 2-21



2.4 Operation

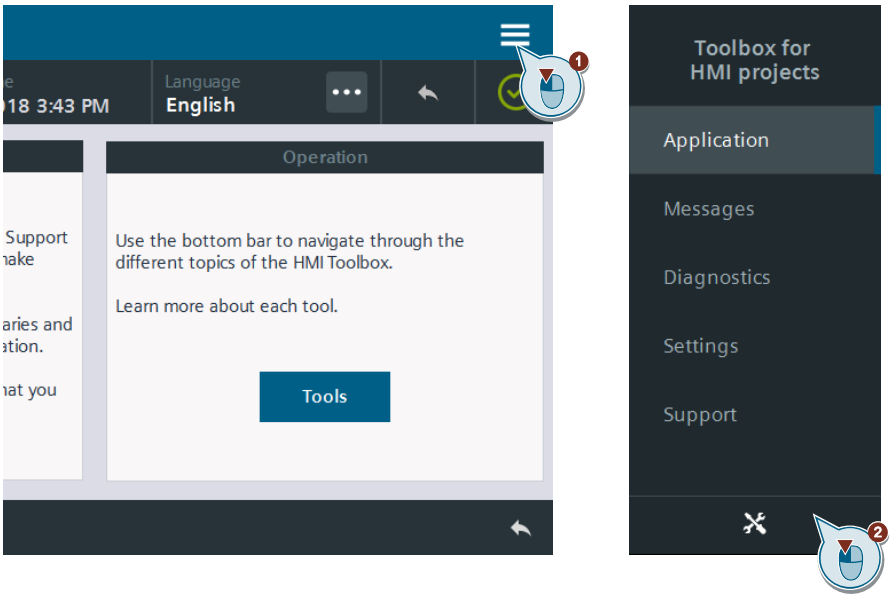
2.4.1 Application example user interface

1. Open the overview page of the application example.

   Figure 2-22

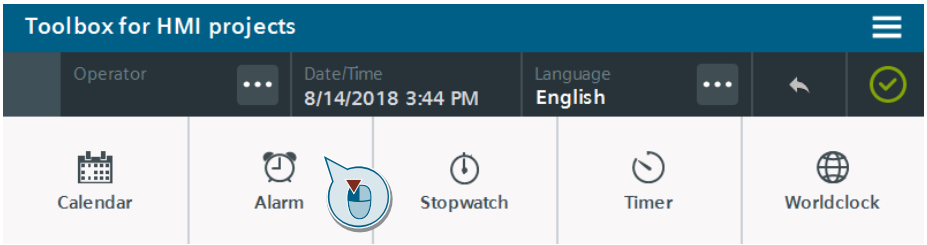
2. Click on the menu button and then on the Tools button to open the tools overview page.

   Figure 2-23



3. Click on a tool of your choice.

   Figure 2-24



4. Use the Back button in the status bar to jump to the previous screen.

   Figure 2-25

5. Click on the "More tools" button to switch between the tool overviews.

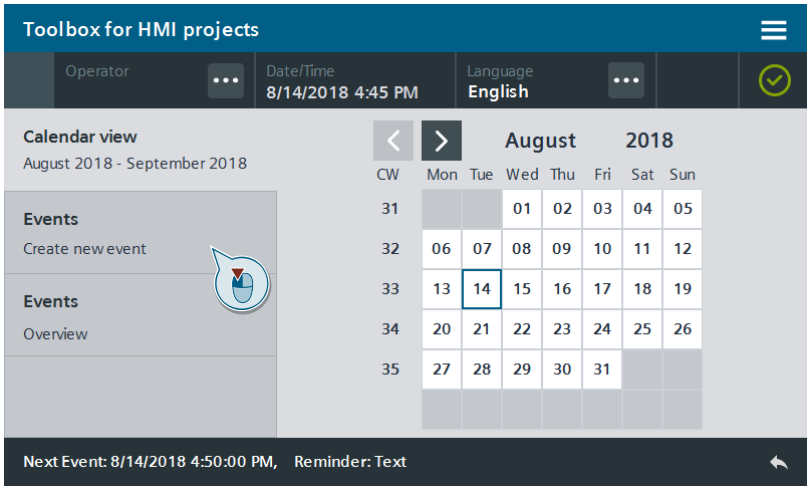
Figure 2-26

2.4.2 Navigation options within the tools

Page navigation on the left

1. Click on a button in the page navigation to open the associated screen.

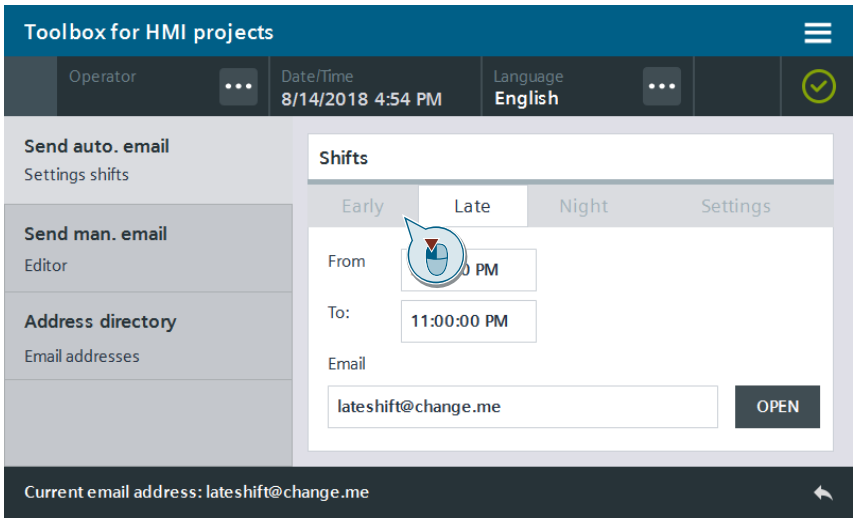
Figure 2-27



InScreen navigation

1. Click on a button in the InScreen navigation to change the visibility of the associated objects.

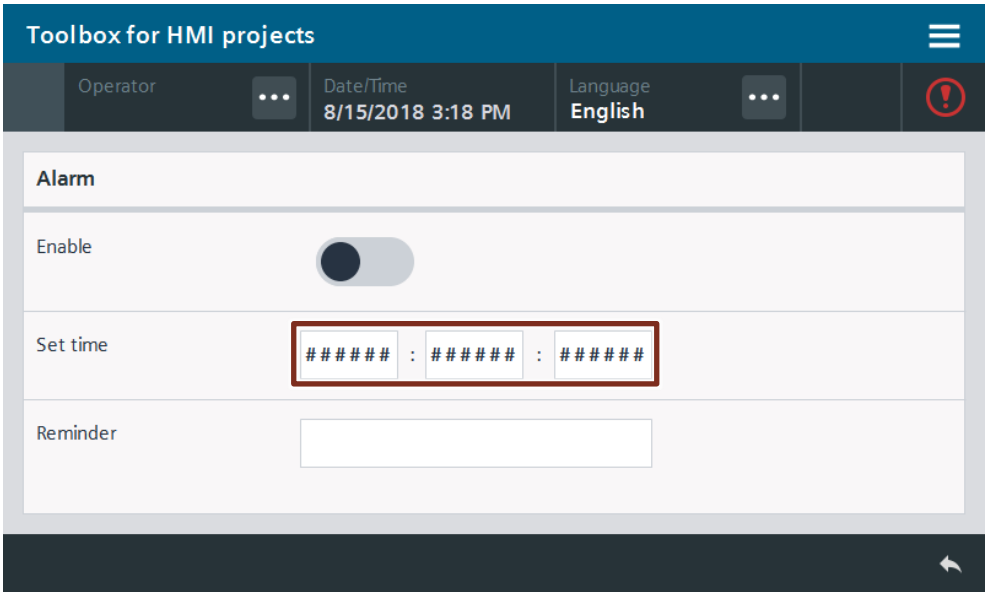
Figure 2-28



2.5 Error handling

Display of ##### in I/O fields

Figure 2-29



If ##### is displayed in the faceplate for device information, there is a communication problem with the HMI operator panel for control.

Perform the steps listed below:

- Check whether the connecting cables are wired correctly or show any signs of damage.
- Check whether the PG/PC interface is set correctly.

  https://support.industry.siemens.com/cs/ww/en/view/38717202

  You can find the settings under "Control Panel> Set PG/PC interface".
- Check whether the devices are in the same network.
- Check whether the IP address of the device is blocked in the network router.

The process values are displayed after the communication error has been remedied.

3 Time functions - Calendar

3.1 General description

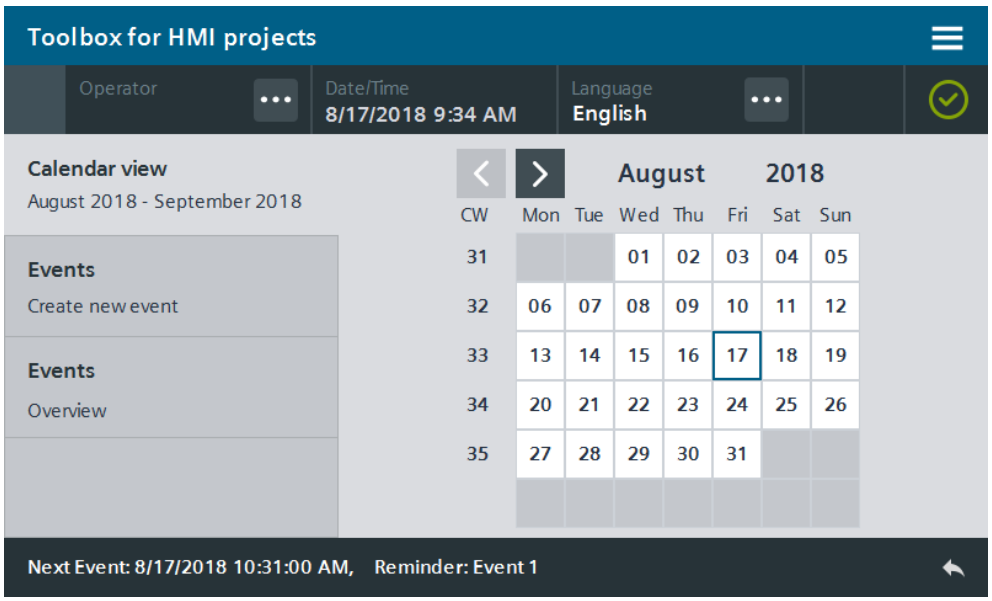
The calendar provides an overview of individual days of the current and the next month. The current day is highlighted in blue.

You can enter up to 30 appointments in the calendar. The calendar will remind you of any pending events that are scheduled.

The appointments are saved in the file system of the operator panel so that they are still available after restarting Runtime or the operator panel.

This tool does not depend on a PLC. The calculations are performed by the HMI operator panel.

Figure 3-1



3.1.1 Hardware and software components

This tool is valid for:

- SIMATIC WinCC Comfort / Advanced V15.1
- SIMATIC Comfort Panels, Comfort PRO Panels, Outdoor Panels, Mobile Panels 2nd Generation
- SIMATIC WinCC RT Advanced V15.1

3.1.2 VBS scripts used

This section explains the functions of the scripts used in the tool.

LHmiTime_vbsCalendarEvent

The "LHmiTime_vbsCalendarEvent" script is used for event management. The script handles the following tasks:

- Initialize the event entries
- Create and save a new event
- Delete an existing event
- Transfer the parameters to the associated HMI tags

The events are stored in the "events.txt" file with the associated time stamp and reminder text. The storage path of the file is:

- Panels: \flash\106226404_Tools\
- WinCC RT Advanced: C:\106226404_Tools\

LHmiTime_vbsCalendarSaveOldEvent

The "LHmiTime_vbsCalendarSaveOldEvent" script saves the pending event (time stamp and reminder text) to the associated HMI tag for display in the status bar of the tool.

LHmiTime_vbsGenerateCalendar

The "LHmiTime_vbsGenerateCalendar" script generates the calendar overview with the current month and next month based on the current date.

LHmiTime_vbsShowEventPage

Depending on the status of the scroll bar, the "LHmiTime_vbsShowEventPage" script shows the screen with the events 1-6, 7-12, 13-18, 19-24, 25-30.

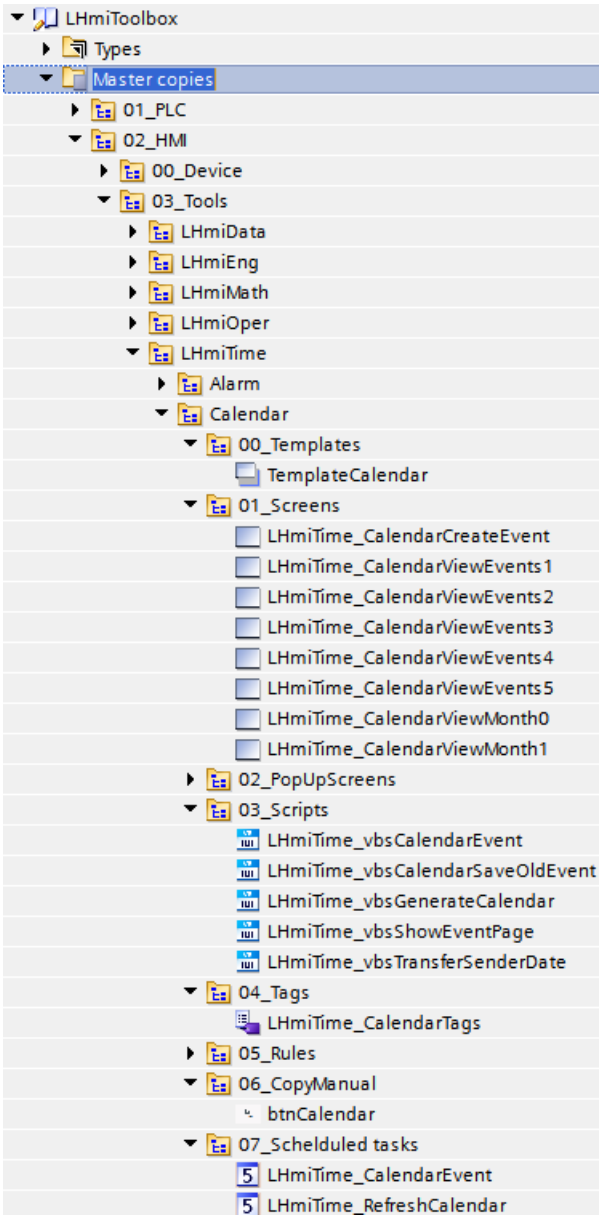
LHmiTime_vbsTransferSenderDate

The "LHmiTime_vbsTransferSenderDate" script imports the date of the selected day in the calendar, opens the screen for creating a new event. In addition, the script transfers the current date to the input screen for a new event.

3.2 Integration into the user project

1. Open your WinCC configuration and the library with the tools (Section 2.3).
2. Open the folder "Master copies > 02_HMI > 03_Tools > LHmiTime > Calendar" of the library.
3. Drag the elements (Template, Screens, Scripts, Tag table, Tasks) to the corresponding folder of the operator panel.

Figure 3-2



Note

Depending on the size of the HMI operator panel, it may be necessary to adapt the screens.

4. Open the "LHmiTime_vbsGenerateCalender" and "LHmiTime_vbsCalendarEvent" scripts at the "Set up" event of your start screen so that the events are loaded after a restart.

5. When you adapt the size of the calendar, enter the changed height or width of a calendar day I/O field as start value for the tags "calendarFieldHeight" and "calendarFieldWidth" in the "LHmiTime_CalendarTags" tag table.
   The position of the selection frame is calculated based on these tags.
6. Drag the "btnCalendar" button from the library to your screen. You open the tool with this button.
7. Download the software to your HMI operator panel or start the simulation.

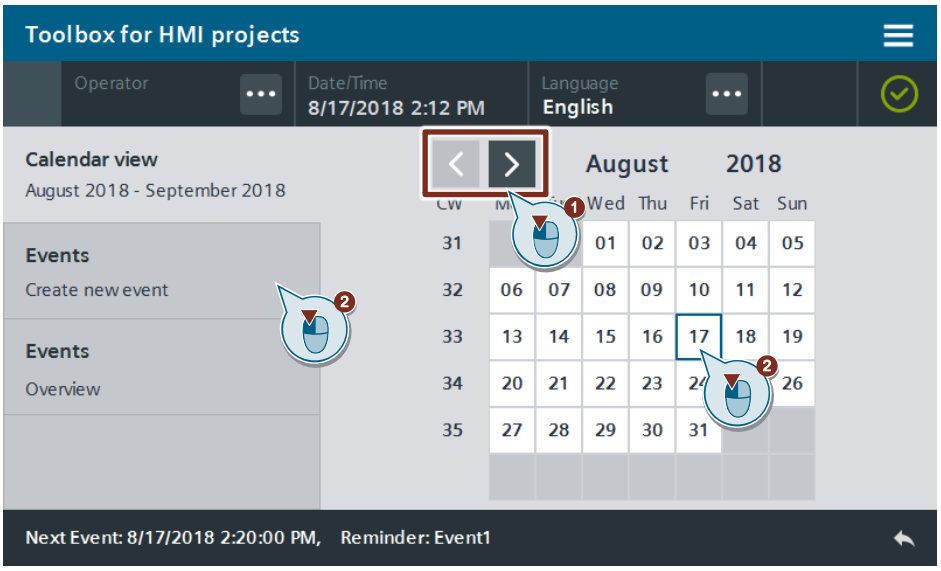
3.3 Operation

1. Open the visualization on your operator panel or simulate it.
2. Open the Tools overview and click on the "Calendar" button.

   Use the arrow buttons to switch between current month and the next month. To create an event, click on a day. A screen opens in which you can create a new event.

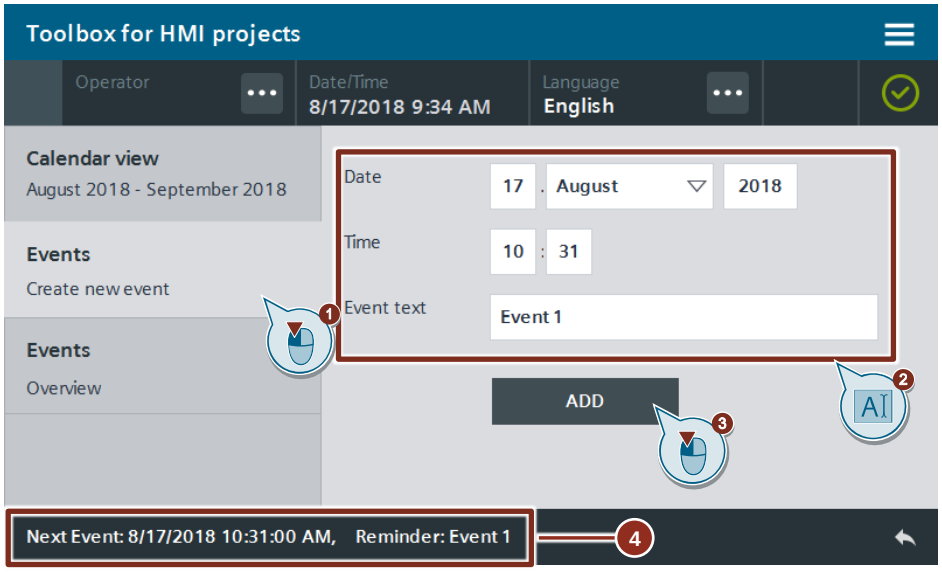
   Alternatively, you can use the page navigation on the left to open the screen.

   Figure 3-3



3. Adapt the date / time / event text and save the event with the "ADD" button.

   Figure 3-4

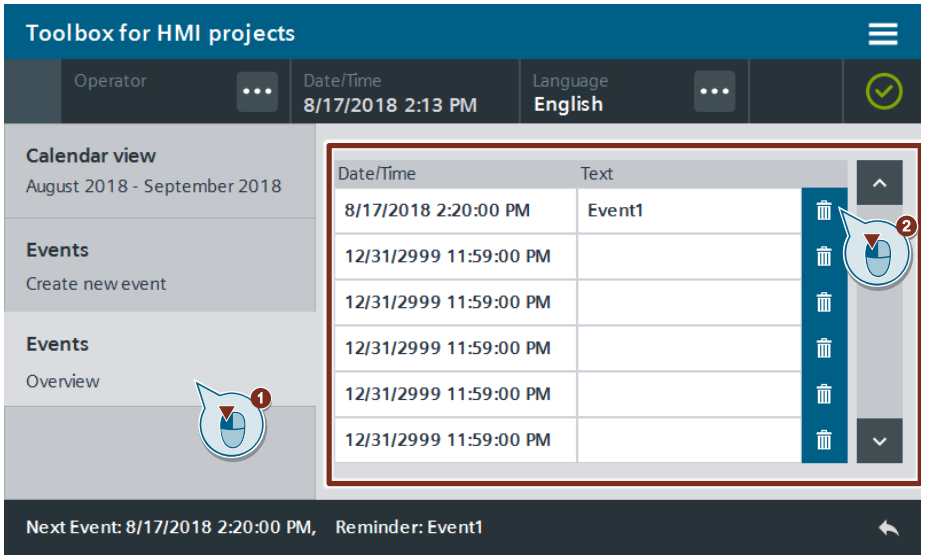


   The next event is displayed in the status bar.

4. Click on the "Events Overview" button.
   All entered events are listed in the table.

   You delete an event with the associated recycle bin button.

   Figure 3-5

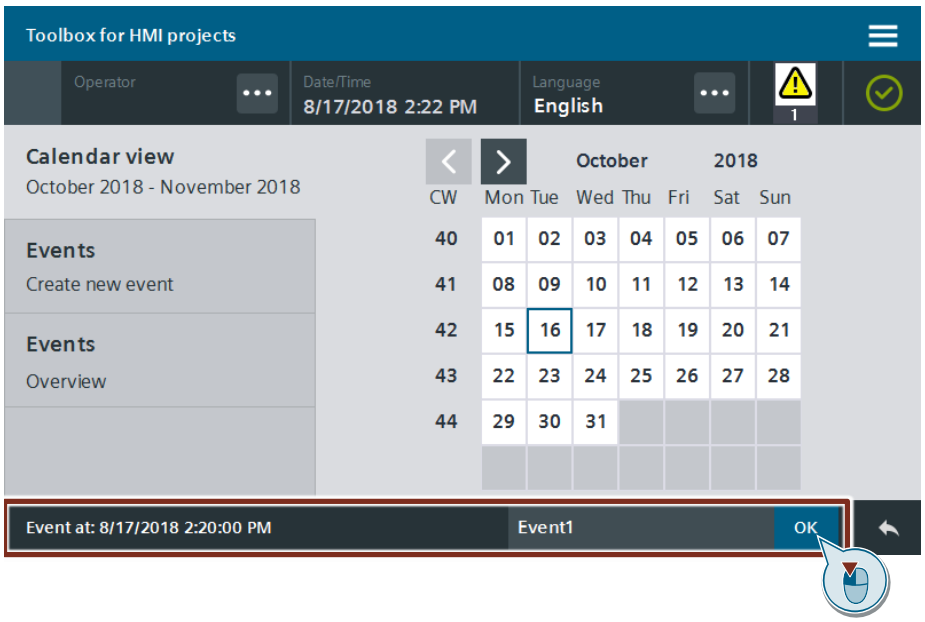


   The event is deleted and the next pending event is displayed in the status bar.

5. When the date and time of an event is reached, the screen with the calendar overview of the current month is opened and the associated event text with a button to confirm the event is shown in the status bar.

6. Confirm the pending event with the "OK" button.

   Figure 3-6



3.4 Error handling

When you add an event in the past, an alarm with the alarm text "Date is in the past" with alarm ID "60000" is triggered. You can view the alarm in the "Alarm view" control. No new event is created. Repeat your entry and select an event in the future.

4 Time functions – Time-of-day alarm / Alarm

4.1 General description

You can use the time-of-day alarm / alarm to be reminded of a specific event in Runtime at a specific time (time-of-day).

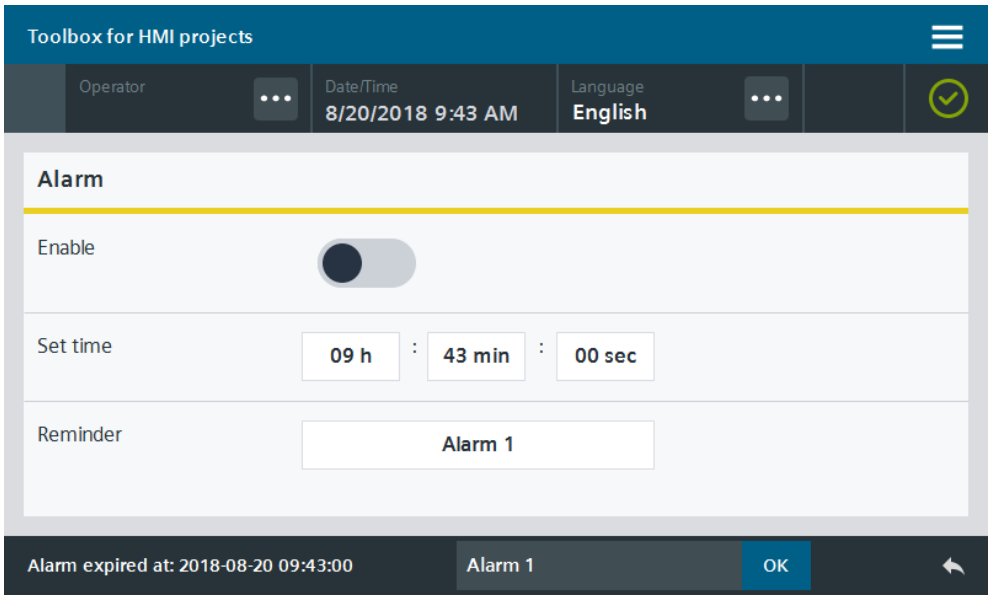
The time must be set in the format (hh:mm:ss) by means of three I/O fields directly in the screen. The time-of-day alarm / alarm is enabled with a switch.

The PLC compares the current time with the time of the time-of-day alarm / alarm and triggers an alarm when the set time has been reached.

In the status bar you can see when the alarm has expired and acknowledge it.

If you close the screen before the alarm is triggered, the alarm is still maintained.

Figure 4-1



4.1.1 Hardware and software components

This application example is valid for:

- SIMATIC STEP 7 Basic / Professional V15.1
- SIMATIC WinCC Comfort / Advanced V15.1
- SIMATIC Comfort Panels, Comfort PRO Panels, Outdoor Panels, Mobile Panels 2nd Generation
- SIMATIC WinCC RT Advanced V15.1
- SIMATIC S7-1500

4.1.2 Data types and function blocks used

This section explains the functions of the function blocks and data types used in the tool.

FC "LGF_DTLtoString"

The function block "LGF_DTLtoString" has been applied from the "Library with general functions (LGF) for STEP 7 (TIA Portal) and S7-1200 / S7-1500" library. This block converts a date component of the data type "DTL" to a character string of the format "String".

The link to the entry page of the library is available in the document list under \3\.

FB "LHmiTime_Alarm"

The function block "LHmiTime_Alarm" compares the entered alarm time with the system time. If both match, the function block sets an "elapsed" alarm status and returns the current system time "elapsedTime".

Figure 4-2 LHmiTime_Alarm

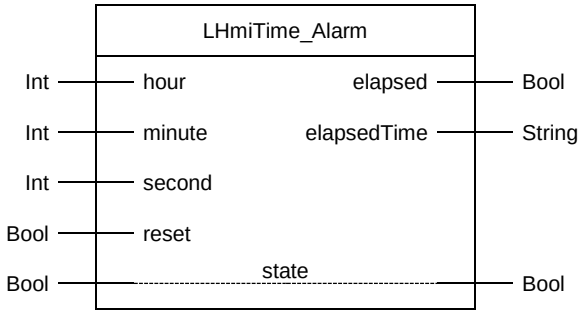


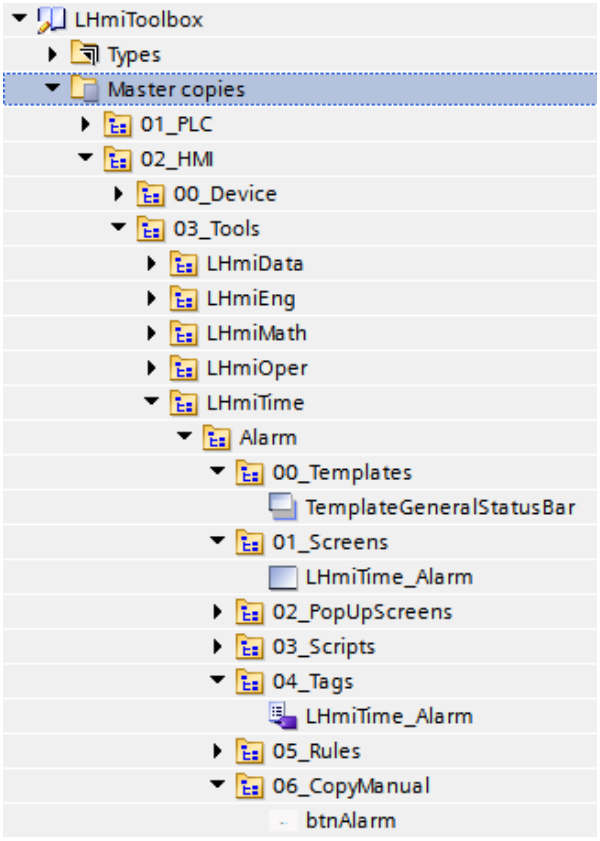
Table 4-1: Parameters of LHmiTime_Alarm

Name	P type	Data type	Comment
hour	IN	Int	Time-of-day alarm, specification in hours
minute	IN	Int	Time-of-day alarm, specification in minutes
second	IN	Int	Time-of-day alarm, specification in seconds
reset	IN	Bool	Time-of-day alarm, hours
elapsed	OUT	Bool	Time-of-day alarm, trigger for pop-up screen
elapsedTime	OUT	String	Time-of-day alarm, time stamp for HMI
state	IN_OUT	Bool	Status feedback function block

4.2 Integration into the user project

1. Open your WinCC configuration and the library with the tools (Section 2.3).
2. Open the folder "Master copies > 02_HMI > 03_Tools > LHmiTime > Alarm" of the library.
3. Drag the elements (Template, Screen, Tag table) to the corresponding folder of the operator panel.

Figure 4-3



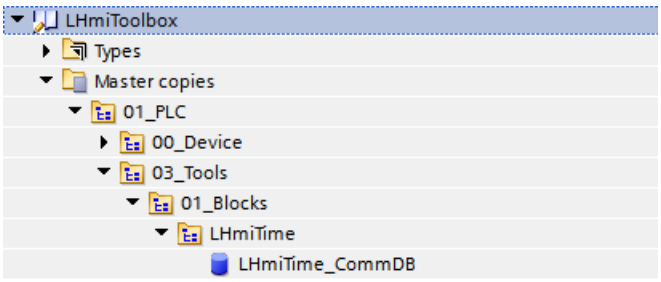
Note

Depending on the size of the HMI operator panel, it may be necessary to adapt the screen.
If your HMI connection to the PLC is not called "HMI_Connection_1", update your HMI connection in the tag table.
You must also synchronize the HMI tags again with the PLC tags.

4. Drag the "btnAlarm" button from the library to your screen. You open the tool with this button.
5. Open the folder "Master copies > > 01_PLC > 03_Tools > 01_Blocks > LHmiTime" of the library.

6. Drag the data block " LHmiTime_CommDB" to the "Program blocks" folder of your PLC.

   Figure 4-4

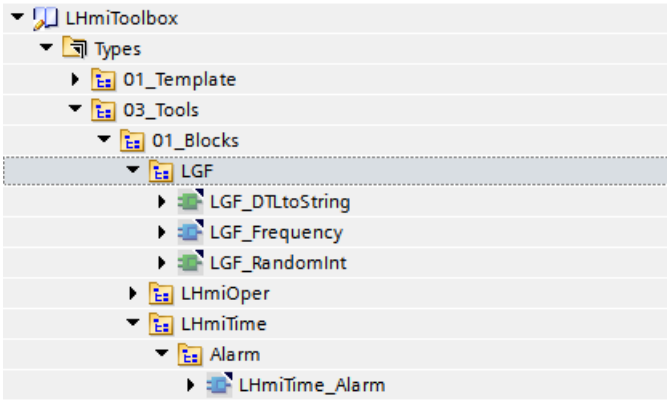


   All tags that are required for the time-of-day alarm have the prefix "alarm". Delete all other tags from the data block if you do not need them.

7. Open the folder "Types > 03_Tools > 01_Blocks > LHmiTime > Alarm" of the library.

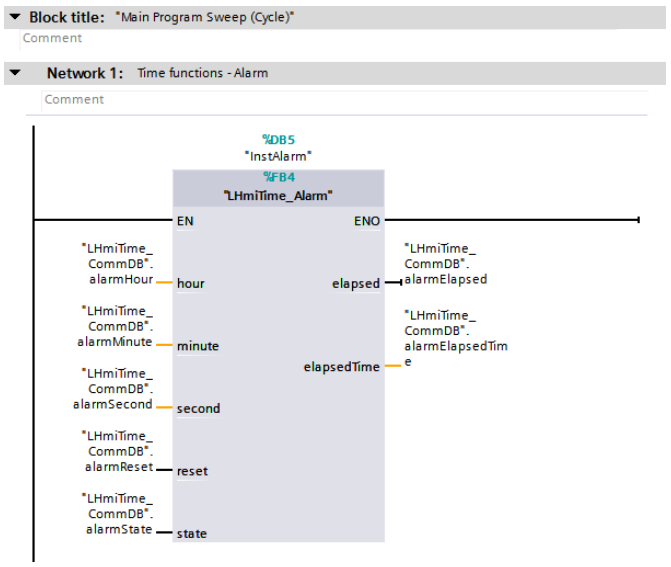
8. Drag the function block "LHmiTime_Alarm" to the "Program blocks" folder of your PLC.

   Figure 4-5



9. Call the function block "LHmiTime_Alarm" in your user program and interconnect the inputs and outputs with the corresponding tags of the communication DB.

   Figure 4-6

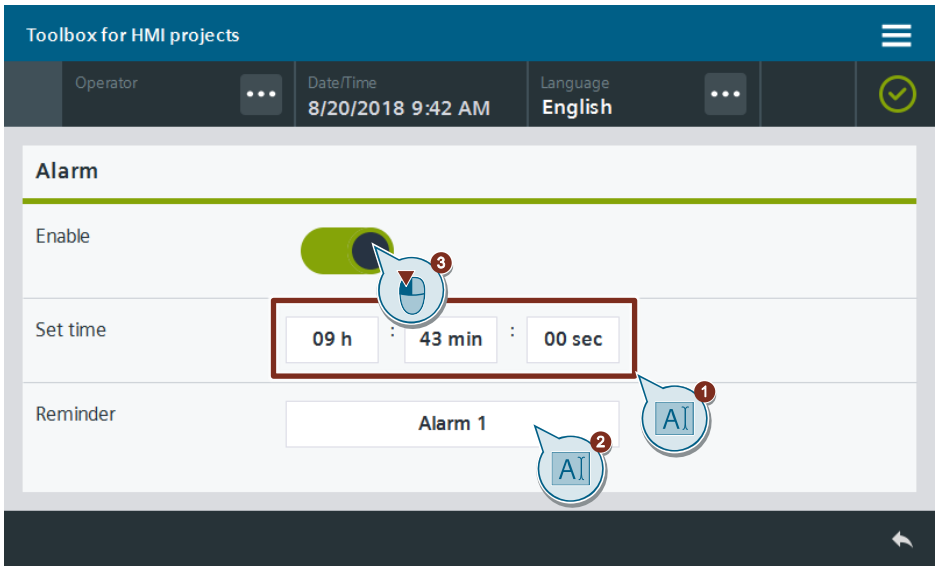


10. Download the software to your operator panel and your PLC or start the simulation.

4.3 Operation

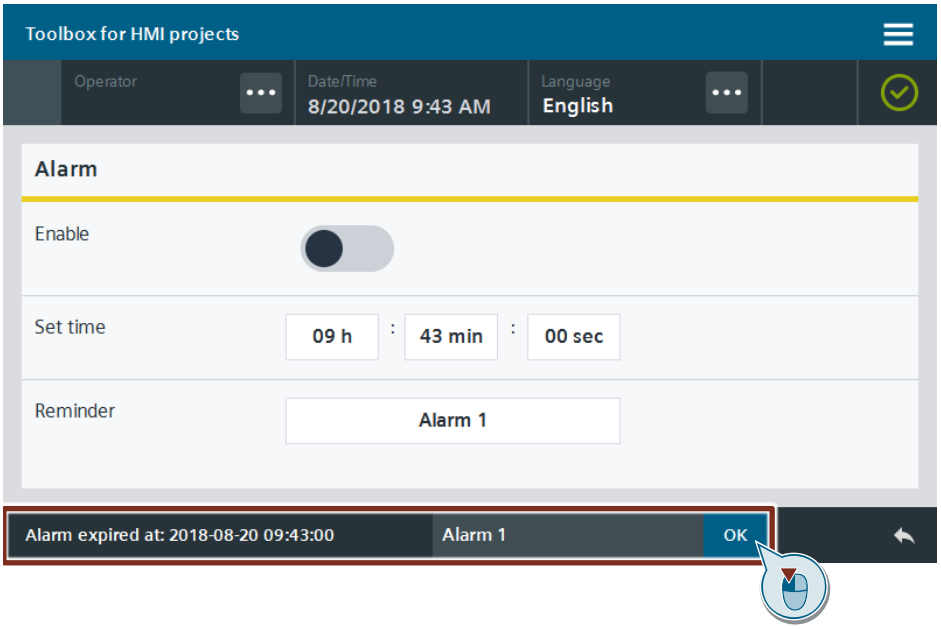
1. Open the visualization on your operator panel or simulate it.
2. Open the Tools overview and click on the "Alarm" button.
3. Enter the time and the reminder text for the time-of-day alarm. Enable the alarm with the "Enable" switch.

   Figure 4-7



4. When the time-of-day alarm is enabled, the screen with the alarm is opened and the associated reminder text with a button to confirm the alarm is shown in the status bar.
5. Acknowledge the pending time-of-day alarm with the "OK" button.

   Figure 4-8



5 Time functions – Stopwatch

5.1 General description

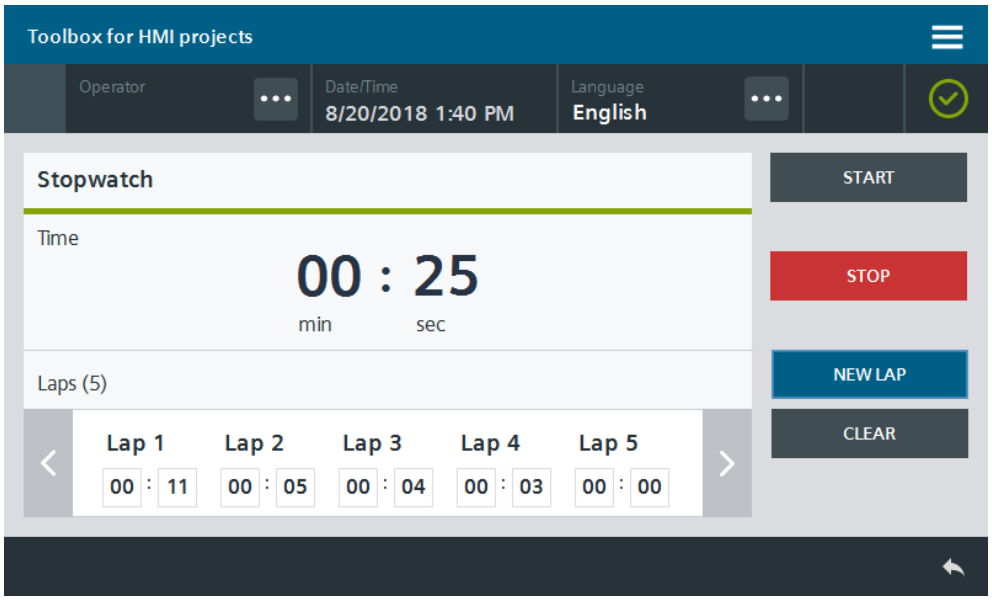
You can monitor and record the duration of production steps in your plant with the stopwatch.

You start and stop the stopwatch with the "START" / "STOP" buttons. There are additional buttons to measure the lap times and reset them. The PLC calculates the lap time.

The stopwatch can save up to 5 lap times and display them on your HMI operator panel. The stopwatch stops once the five lap times have been recorded.

The stopwatch does not stop running when you close the screen.

Figure 5-1



5.1.1 Hardware and software components

This application example is valid for:

- SIMATIC STEP 7 Basic / Professional V15.1
- SIMATIC WinCC Comfort / Advanced V15.1
- SIMATIC Comfort Panels, Comfort PRO Panels, Outdoor Panels, Mobile Panels 2nd Generation
- SIMATIC WinCC RT Advanced V15.1
- SIMATIC S7-1500

5.1.2 Data types and function blocks used

This section explains the functions of the function blocks and data types used in the tool.

Data type "LHmiTime_typeRoundStopWatch"

The data type "LHmiTime_typeRoundStopWatch " defines the stop/lap times as data format "Time" as well as the associated number of minutes and seconds.

Table 5-1: Parameters of typeRound

Name	Data type	Comment
time	Time	Total time
min	Int	Number of minutes
sec	Int	Number of seconds

FB "LHmiTime_Stopwatch"

The function block "LHmiTime_Stopwatch" starts an internal timer that calculates the stop time "total" as well as the individual lap times ("round1" – "round5").

Figure 5-2 LHmiTime_Stopwatch

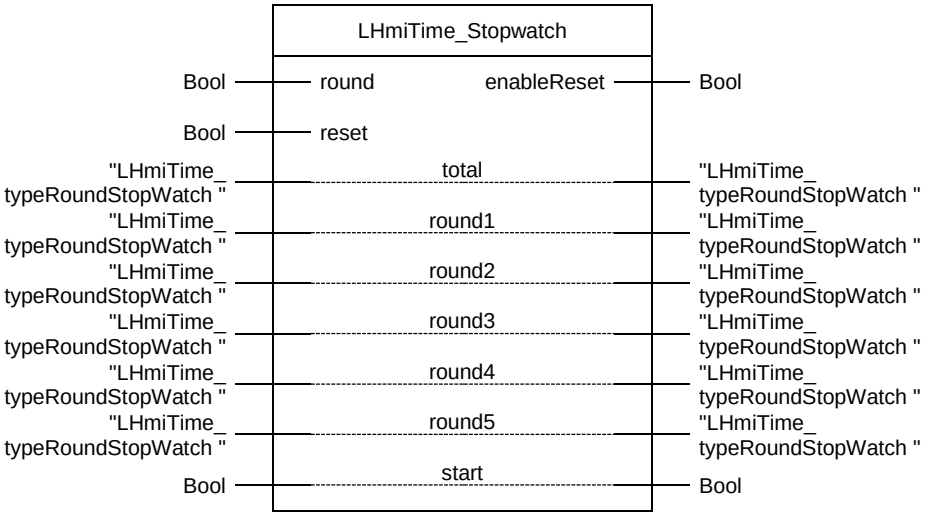


Table 5-2: Parameters of "LHmiTime_Stopwatch"

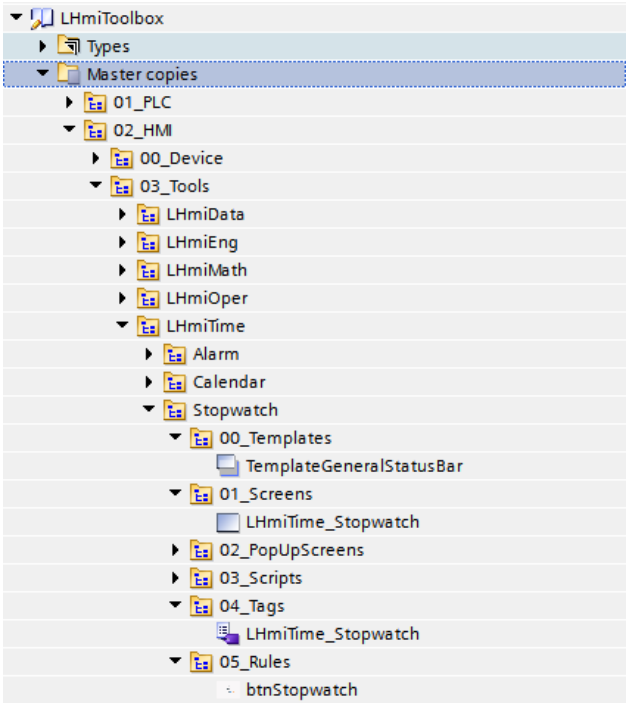
Name	P type	Data type	Comment
round	IN	Bool	Lap trigger
reset	IN	Bool	Reset trigger
enableReset	OUT	Bool	Availability reset trigger
total	IN_OUT	"LHmiTime_ typeRoundStopWatch"	Total stop time
round1	IN_OUT	"LHmiTime_ typeRoundStopWatch"	Lap time 1
round2	IN_OUT	"LHmiTime_ typeRoundStopWatch"	Lap time 2
round3	IN_OUT	"LHmiTime_ typeRoundStopWatch"	Lap time 3

Name	P type	Data type	Comment
round4	IN_OUT	"LHmiTime_ typeRoundStopWatch"	Lap time 4
round5	IN_OUT	"LHmiTime_ typeRoundStopWatch"	Lap time 5
start	IN_OUT	Bool	Start trigger

5.2 Integration into the user project

1. Open your WinCC configuration and the library with the tools (Section 2.3).
2. Open the folder "Master copies > 02_HMI > 03_Tools > LHmiTime > Stopwatch" of the library.
3. Drag the elements (Template, Screen, Tag table) to the corresponding folder of the operator panel.

Figure 5-3



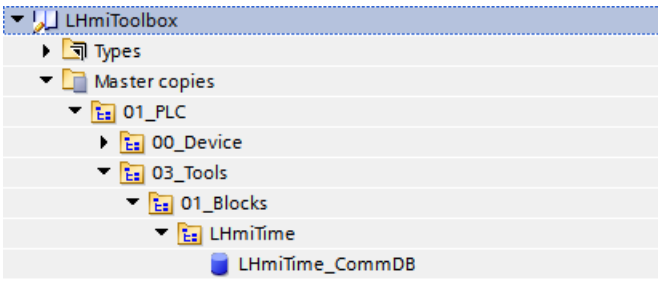
Note

Depending on the size of the HMI operator panel, it may be necessary to adapt the screen.
If your HMI connection to the PLC is not called "HMI_Connection_1", update your HMI connection in the tag table.
You must also synchronize the HMI tags again with the PLC tags.

4. Drag the "btnStopwatch" button from the library to your screen. You open the tool with this button.
5. Open the folder "Master copies > 01_PLC > 03_Tools > 01_Blocks > LHmiTime" of the library.

6. Drag the data block "LHmiTime_CommDB" to the "Program blocks" folder of your PLC.

   Figure 5-4

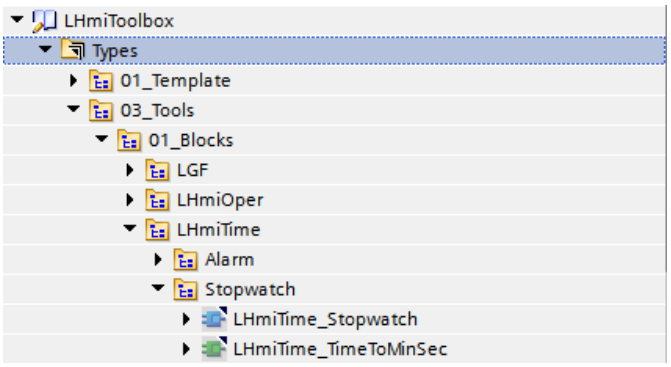


   All tags that are required for the stopwatch have the prefix "stopWatch". Delete all other tags from the data block if you do not need them.

7. Open the folder "Types > 03_Tools > 01_Blocks > LHmiTime > Stopwatch" of the library.

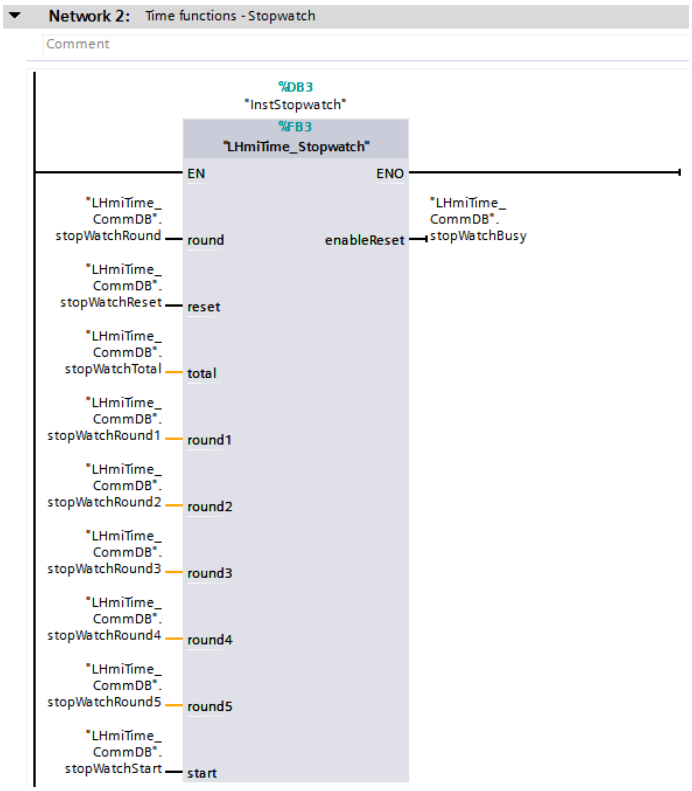
8. Drag the function block "LHmiTime_Stopwatch" to the "Program blocks" folder of your PLC.

   Figure 5-5



9. Call the function block "LHmiTime_Stopwatch" in your user program and interconnect the inputs and outputs with the corresponding tags of the communication DB.

   Figure 5-6

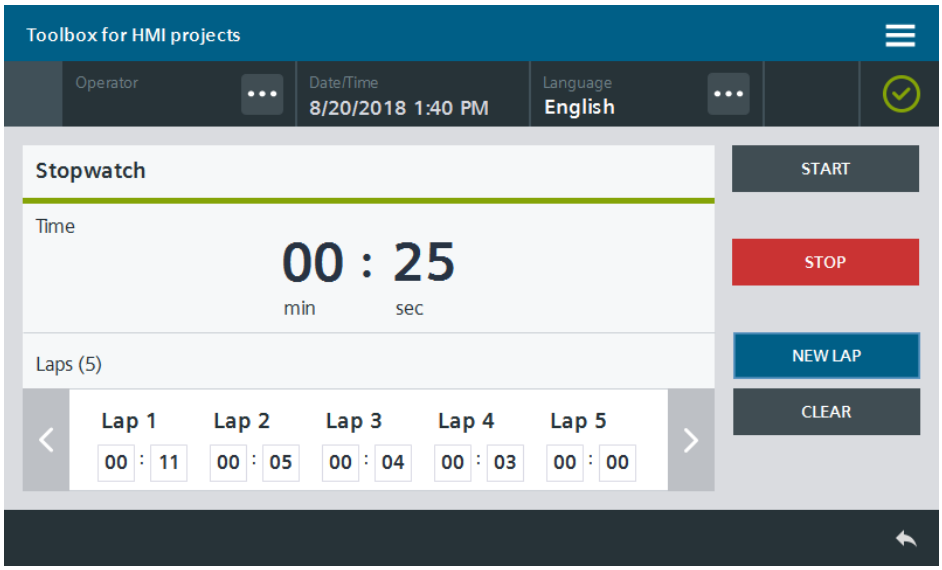


10. Download the software to your operator panel and your PLC or start the simulation.

5.3 Operation

1. Open the visualization on your operator panel or simulate it.
2. Open the Tools overview and click on the "Stopwatch" button.
3. Start the stopwatch with the "START" button.

   Figure 5-7



4. Take a lap time by pressing the "NEW LAP" button.

   A new lap starts and the measured lap time is displayed under "Laps (5)".
5. Stop the stopwatch with the "STOP" button.

   Reset the lap time with the "CLEAR" button.

6 Time functions – Timer

6.1 General description

You use the timer to have the system remind you of an event after a defined runtime has elapsed.

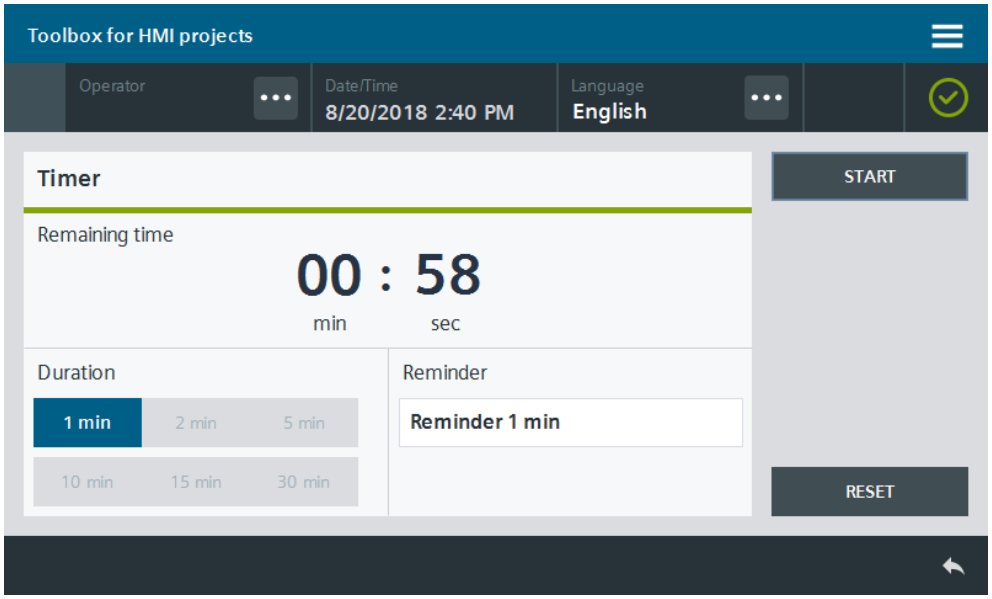
By default, the timer offers five runtimes (1 min, 2 min, 5 min, 10 min, 15 min). You set the runtime by pressing the associated button.

The PLC starts a timer with the specified runtime and triggers an alarm when this time has expired.

In the status bar you can see when the timer has expired and acknowledge it.

If you close the screen before the timer is triggered, the timer still remains active.

Figure 6-1



6.1.1 Hardware and software components

The application example is valid for:

- SIMATIC STEP 7 Basic / Professional V15.1
- SIMATIC WinCC Comfort / Advanced V15.1
- SIMATIC Comfort Panels, Comfort PRO Panels, Outdoor Panels, Mobile Panels 2nd Generation
- SIMATIC WinCC RT Advanced V15.1
- SIMATIC S7-1500

6.1.2 Function blocks used

This section explains the functions of the function blocks used in the tool.

FC "LGF_DTLtoString"

The function block "LGF_DTLtoString" has been applied from the "Library with general functions (LGF) for STEP 7 (TIA Portal) and S7-1200 / S7-1500" library. This block converts a date component of the data type "DTL" to a character string of the format "String".

The link to the entry page of the library is available in the document list under \3\.

FB "LHmiTime_Timer"

The function block "LHmiTime_Timer" starts a timer with the runtime "duration". When this runtime has expired, the function block sets an alarm status "elapsed" and returns the current system time "elapsedTime".

Figure 6-2 LHmiTime_Timer

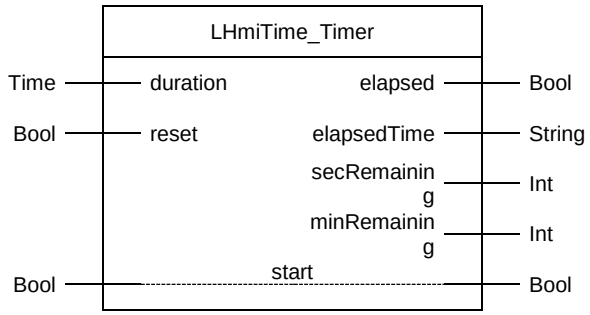


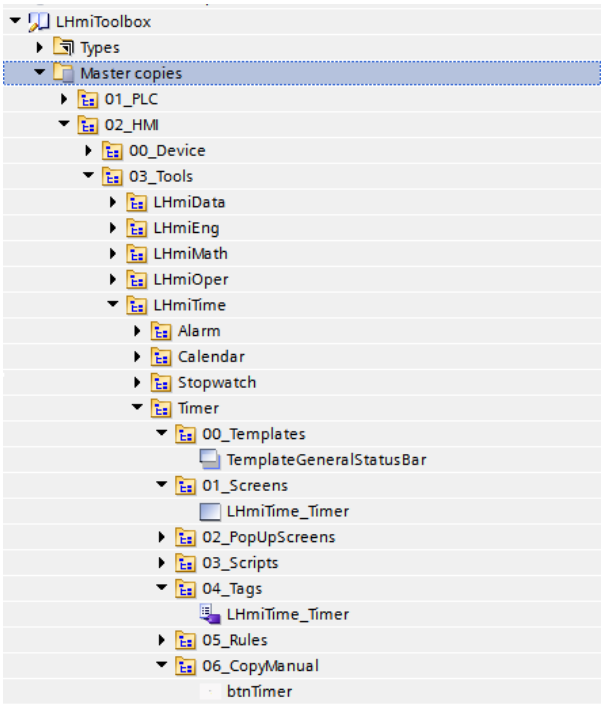
Table 6-1: Parameters of "LHmiTime_Timer"

Name	P type	Data type	Comment
duration	IN	Time	Timer, runtime
reset	IN	Bool	Timer, reset trigger
elapsed	OUT	Bool	Timer, trigger for pop-up screen
elapsedTime	OUT	String	Timer, time stamp for HMI
secRemaining	OUT	Int	Timer, remaining seconds
minRemaining	OUT	Int	Timer, remaining minutes
start	IN_OUT	Bool	Timer, Start/Stop trigger

6.2 Integration into the user project

1. Open your WinCC configuration and the library with the tools (Section 2.3).
2. Open the folder "Master copies > 02_HMI > 03_Tools > LHmiTime > Timer" of the library.
3. Drag the elements (Template, Screen, Tag table) to the corresponding folder of the operator panel.

Figure 6-3

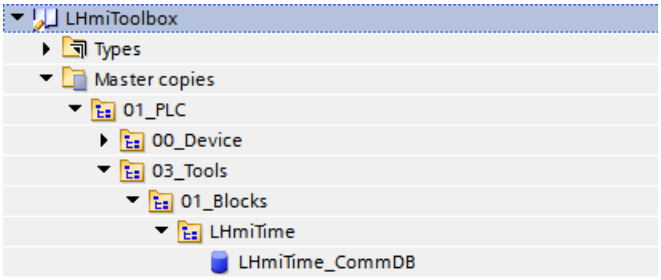


Note

Depending on the size of the HMI operator panel, it may be necessary to adapt the screen.
If your HMI connection to the PLC is not called "HMI_Connection_1", update your HMI connection in the tag table.
You must also synchronize the HMI tags again with the PLC tags.

4. Drag the "btnTimer" button from the library to your screen. You open the tool with this button.
5. Open the folder "Master copies > 01_PLC > 03_Tools > 01_Blocks > LHmiTime" of the library.
6. Drag the data block "LHmiTime_CommDB" to the "Program blocks" folder of your PLC.

Figure 6-4

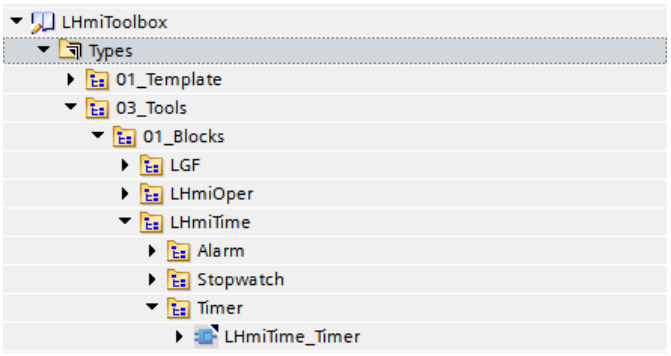


All tags that are required for the "Timer" have the prefix "timer". Delete all other tags from the data block if you do not need them.

7. Open the folder "Types > 03_Tools > 01_Blocks > LHmiTime > Timer" of the library.

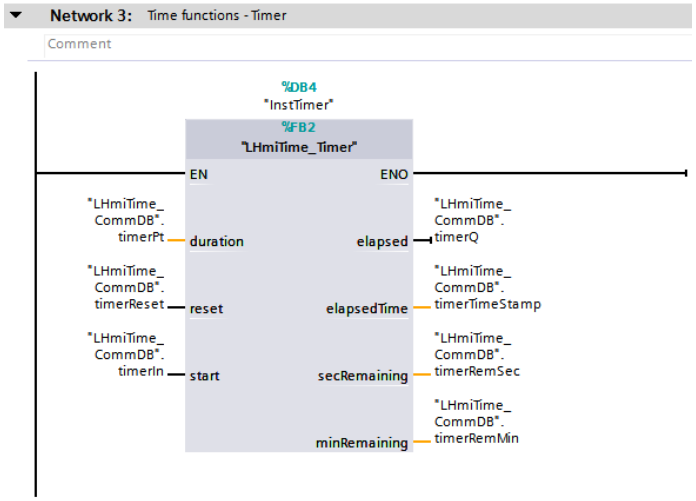
8. Drag the function blocks "LHmiTime_Timer" to the "Program blocks" folder of your PLC.

Figure 6-5



9. Call the function block "LHmiTime_Timer" in your user program and interconnect the inputs and outputs with the corresponding tags of the communication DB.

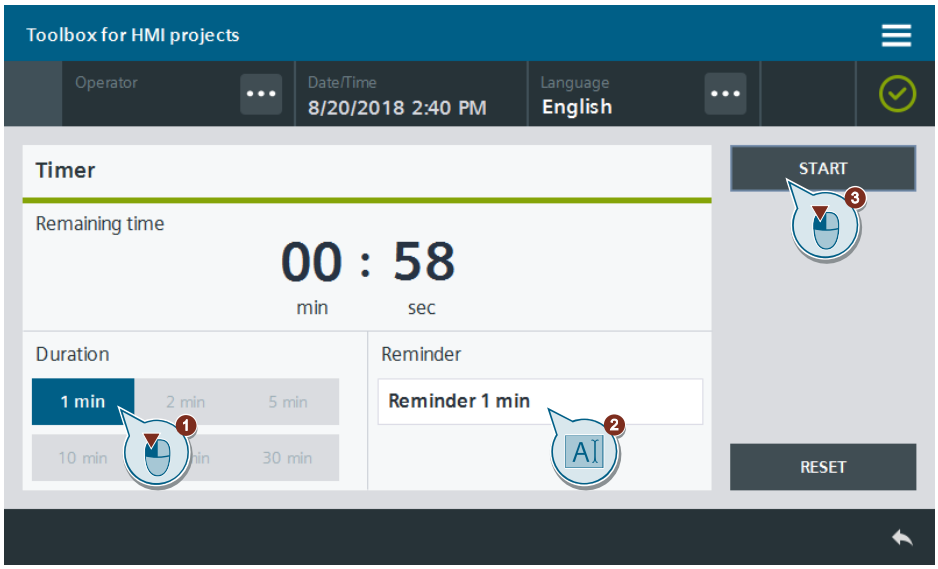
Figure 6-6



10. Download the software to your operator panel and your PLC or start the simulation.

6.3 Operation

1. Open the visualization on your operator panel or simulate it.
2. Open the Tools overview and click on the "Timer" button.
3. Select the runtime and enter a reminder text.
   Start the stopwatch with the "START" button.
   Figure 6-7



   You stop and reset the timer with the "RESET" button.
4. When the timer has expired, the screen with the timer is opened and the associated reminder text with a button to confirm it is shown in the status bar.
5. Acknowledge the pending event alarm with the "OK" button.

7 Time functions – Time switch

7.1 General description

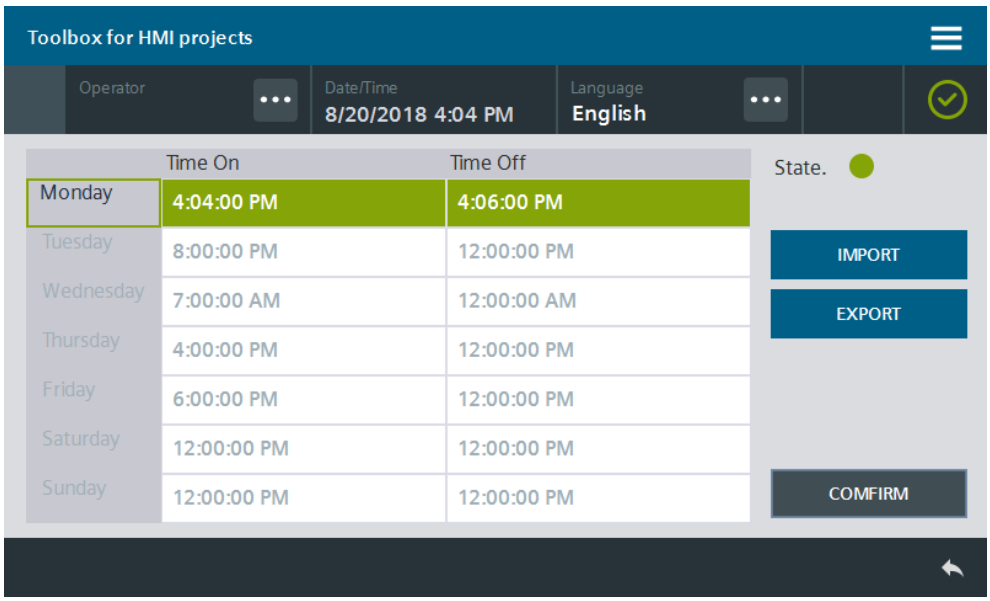
You use the time switch to execute a defined action at specified times.

As an example, the application example shows you how to set an individual on and off time for each day of the week during runtime of the visualization. A status bit is set when the on time is reached; the status bit can be used to execute a defined action.

The time switch shows all days of the week and highlights the current day in color.

You can save the configuration of the on and off times in the file system or download it from the file system.

Figure 7-1



7.1.1 Hardware and software components

The application example is valid for:

- SIMATIC WinCC Comfort / Advanced V15.1
- SIMATIC Comfort Panels, Comfort PRO Panels, Outdoor Panels, Mobile Panels 2nd Generation
- SIMATIC WinCC RT Advanced V15.1

7.1.2 VBS scripts used

The individual functions of the time switch are solved with the help of multiple scripts. You may be able to use these scripts for other areas of application.

LHmiTime_vbsSaveToFileSystem

Depending on the operating system, the script "LHmiTime_vbsSaveToFileSystem" saves the configuration file "LHmiTime_Timeswitch.txt" with the current on and off times to the file system. The storage path of the file is:

- Panels: \flash\106226404_Tools\
- WinCC RT Advanced: C:\106226404_Tools\

Note If the folder and the file do not exist yet, they are now created.
If the file already exists at the storage location, its content is overwritten.

LHmiTime_vbsLoadFromFileSystem

Depending on the operating system, the script "LHmiTime_vbsLoadFromFileSystem" reads the saved configuration file "LHmiTime_Timeswitch.txt " and writes it to HMI tags of the time switch.

LHmiTime_vbsNextTime

The script "LHmiTime_vbsNextTime" sets the on and off times for the current day.

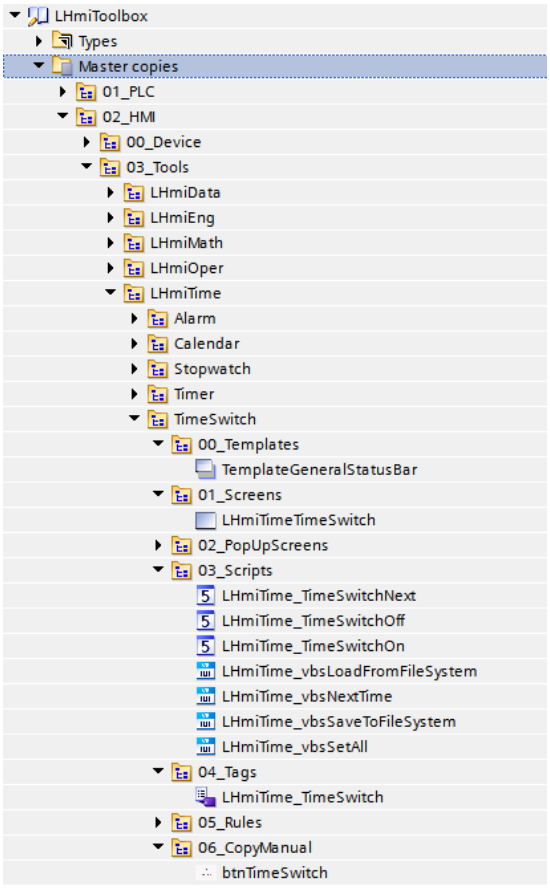
LHmiTime_vbsSetAll

The script "LHmiTime_vbsSetAll" sets the on and off times for Tuesday – Sunday to the on and off time for Monday.

7.2 Integration into the user project

1. Open your WinCC configuration and the library with the tools (Section 2.3).
2. Open the folder "Master copies > 02_HMI > 03_Tools > LHmiTime > TimeSwitch" of the library.
3. Drag the elements (Template, Screens, Scripts, Tasks, Tag table) to the corresponding folder of the operator panel.

Figure 7-2



Note

Depending on the size of the HMI operator panel, it may be necessary to adapt the screens.
If your HMI connection to the PLC is not called "HMI_Connection_1", update your HMI connection in the tag table.

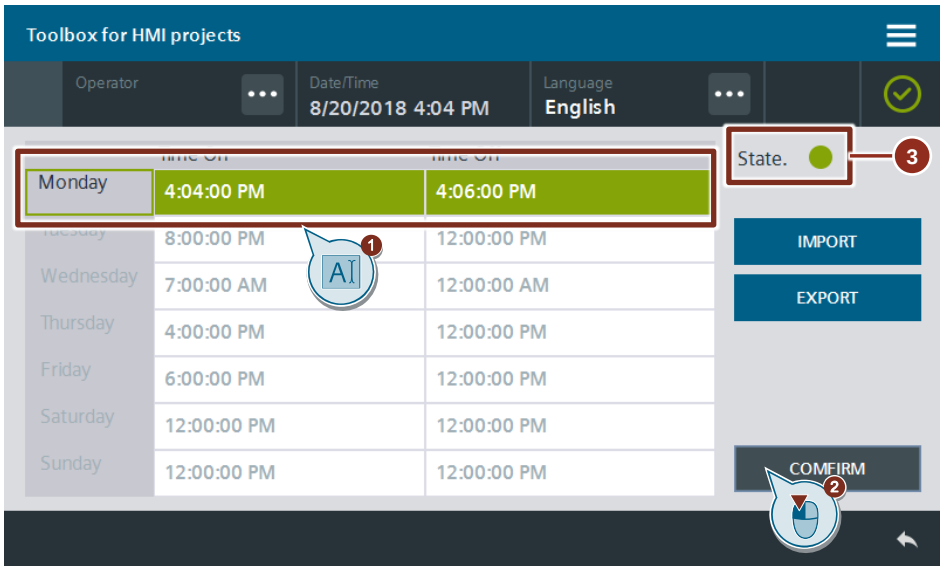
You must also synchronize the HMI tags again with the PLC tags.

4. Open the "LHmiTime_vbsLoadFromFileSystem" script at the "Set up" event of your start screen so that the events are loaded after a restart.
5. Drag the "btnTimeSwitch" button from the library to your screen. You open the tool with this button.
6. Connect an event of your choice that you want to execute in a time-controlled manner to the "Value change" event of the "LHmiTime_ResultTimeSwitch" tag.

7.3 Operation

1. Download the visualization to your operator panel or simulate it.
2. Open the Tools overview and click on the "Time switch" button.
3. Set the on and off times for the current day and confirm the settings with the "CONFIRM" button.

Figure 7-3



Note

When the on time has been reached, the status bit is set and the status indicator (RGB: 133, 164, 8) is highlighted in green. When the off time is activated, the bit is reset and the status indicator (RGB: 202, 51, 51) is highlighted in red.

4. Export the current configuration with the "EXPORT" button.
5. Change the on and off times.
6. Import the saved configuration with the "IMPORT" button.

8 Time functions – World clocks

8.1 General description

You use the world clock to display clocks with different time zones on your HMI operator panel.

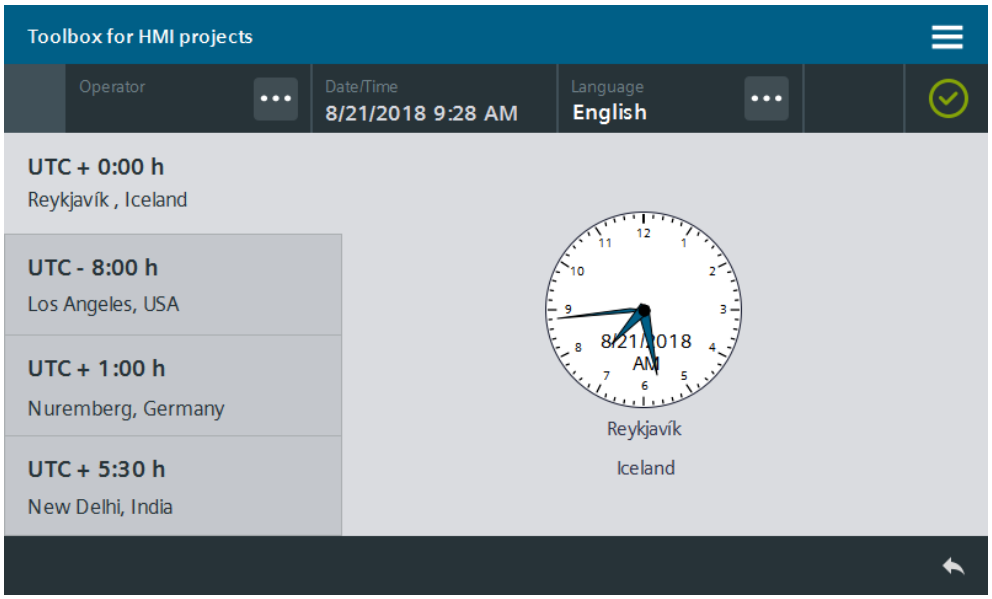
VBS scripts calculate the time zones directly on the HMI operator panel.

Four different clocks with different time zones are displayed in the application example. An extension to include additional time zones is possible at any time.

- Reykjavik, Iceland (UTC + 0:00 h)
- Los Angeles, USA (UTC – 8:00 h)
- Nuremberg, Germany (UTC + 1:00 h)
- New Delhi, India (UTC + 5:30 h)

This tool does not depend on a PLC. The calculations are performed by the HMI operator panel.

Figure 8-1



8.1.1 Hardware and software components

This application example is valid for:

- SIMATIC WinCC Comfort / Advanced V15.1
- SIMATIC Comfort Panels, Comfort PRO Panels, Outdoor Panels, Mobile Panels 2nd Generation
- SIMATIC WinCC RT Advanced V15.1

8.1.2 Data types used

This section explains the data types used by the tool.

Data type "LHmiTime_typeWorldTimeClock"

The data type "LHmiTime_typeWorldTimeClock" defines the parameters for the world clock.

Table 8-1: Parameters of LHmiTime_typeWorldTimeClock

Name	Data type	Comment
clockZoneCityName	WString	City name, 12 characters
clockZoneCityName	WString	Country name, 12 characters
clockZoneTime	DateTime	Time of world clock
clockZoneAmPm	WString	AM / PM display, 2 characters
clockHours	Int	Hours of world clock
clockMinutes	Int	Minutes of world clock

8.1.3 VBS scripts used

This section explains the functions of the scripts used in the tool.

The individual functions of the world clock are solved in multiple scripts so that you can also use these for other functions, such as calculation of daylight saving / standard time.

LHmiTime_vbsClockAmPm

The script "LHmiTime_vbsClockAmPm" calculates for the English language whether the "Time" is to be displayed in AM and PM format.

LHmiTime_vbsClock_HourHand

The script "LHmiTime_vbsClockHourHand" calculates the time based on the position of the hour hand (0-60).

LHmiTime_vbsDaylightSavingTime

The script "LHmiTime_vbsDaylightSavingTime" calculates whether time is daylight saving or standard time. Start and end date as well as the respective time of the switch are required for calculation. To calculate the respective date, you can use the script "LHmiTime_vbsFindDayOfWeekOfMonth".

LHmiTime_vbsFindDayOfWeekOfMonth

The script "LHmiTime_vbsFindDayOfWeekOfMonth" calculates the first, second, third, fourth or last day of a week in a particular month based on the specified parameters. These parameters are required:

- the current week (1-4 or 5 for the last)
- the day of the week (1-7, starting with Sunday)
- the month (1-12)

LHmiTime_vbsTimezoneDisZone

The script "LHmiTime_vbsTimezoneDisZone" calculates the current time in a particular time zone using the UTC time and the difference between UTC time and the desired time zone.

To do this, the script must be handed over:

- The current UTC time (calculation via "LHmiTime_vbsTimezoneUTCTime")
- Difference between UTC time and the time zone (in hours)
- Information on daylight saving / standard time (0: Standard time, 1: Daylight saving time)

LHmiTime_vbsTimezoneUTCTime

The script "LHmiTime_vbsTimezoneUTCTime" uses the local time to calculate and the difference between local and UTC time to calculate the UTC time. These parameters are required:

- Difference between local and UTC time (in hours)
- Information on daylight saving / standard time (0: Standard time, 1: Daylight saving time).

LHmiTime_vbsWorldTimeClock

The script "LHmiTime_vbsWorldTimeClock" calculates the time of the individual time zones.

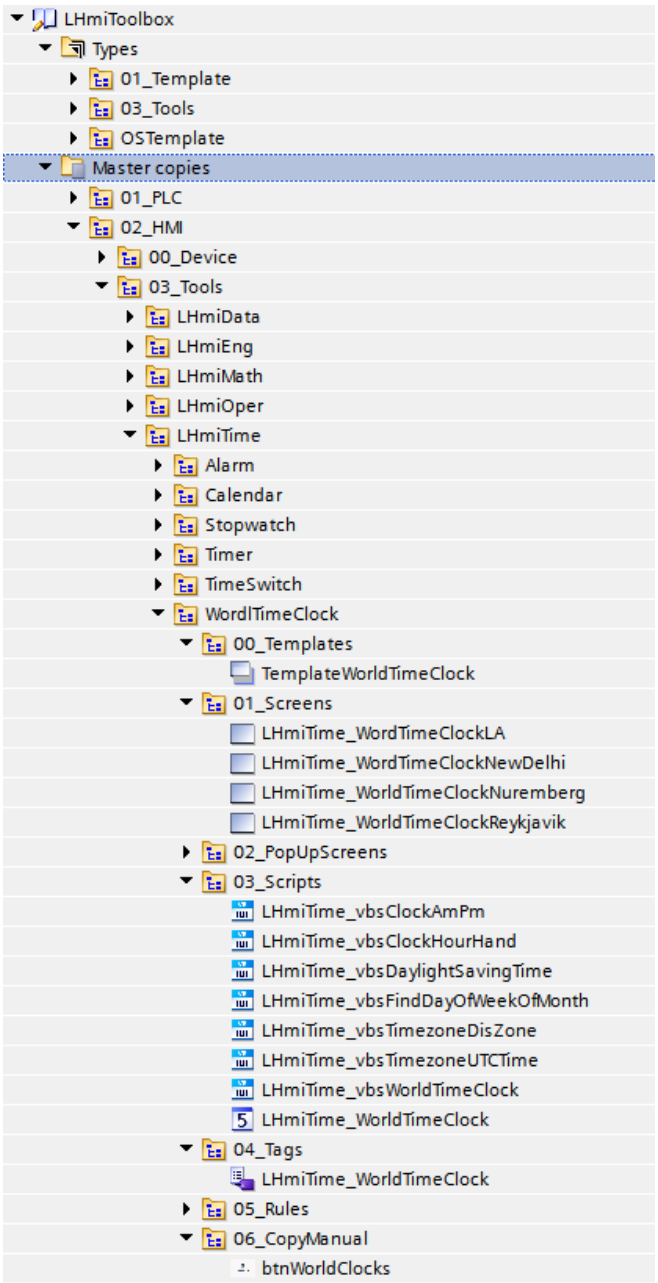
Further information can be found in section 8.2.2.

8.2 Integration into the user project

8.2.1 Using the world clocks

1. Open your WinCC configuration and the library with the tools (Section 2.3).
2. Open the folder "Master copies > 02_HMI > 03_Tools > LHmiTime > WorldTimeClock" of the library.
3. Drag the elements (Template, Screens, Scripts, Task, Tag table) to the corresponding folder of the operator panel.

Figure 8-2



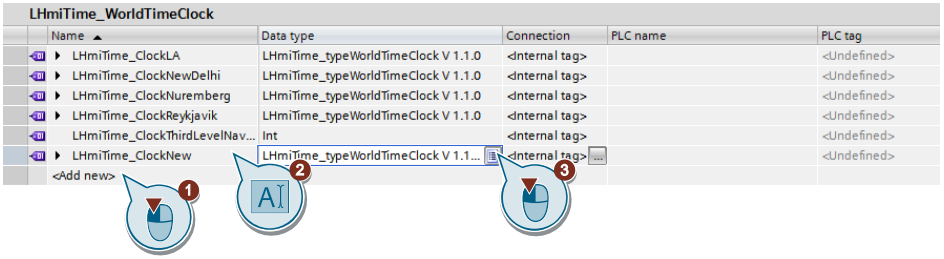
Note
Depending on the size of the HMI operator panel, it may be necessary to adapt the screens.

4. Drag the "btnWorldClocks" button from the library to your screen. You open the tool with this button.

8.2.2 Adding new world clocks

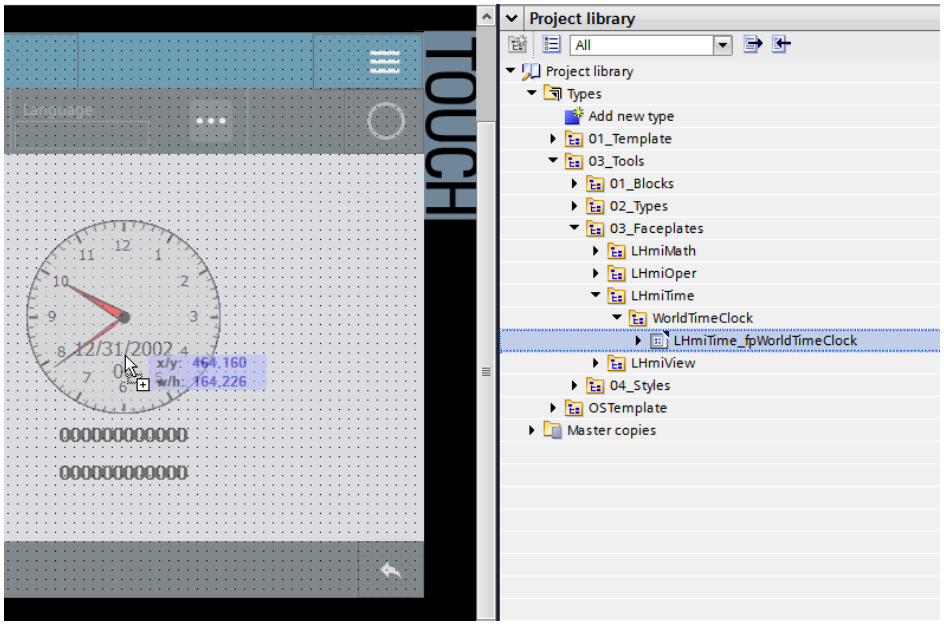
1. Open the tag table "LHmiTime_WorldClockTags".
2. Add a new tag "LHmiTime_ClockNew" of the data type "LHmiTime_typeWorldTimeClock".

Figure 8-3



3. Open the screen in which you want to add the world clock.
4. Drag and drop a new instance of the "LHmiTime_fpWorldTimeClock" faceplate from the project library.

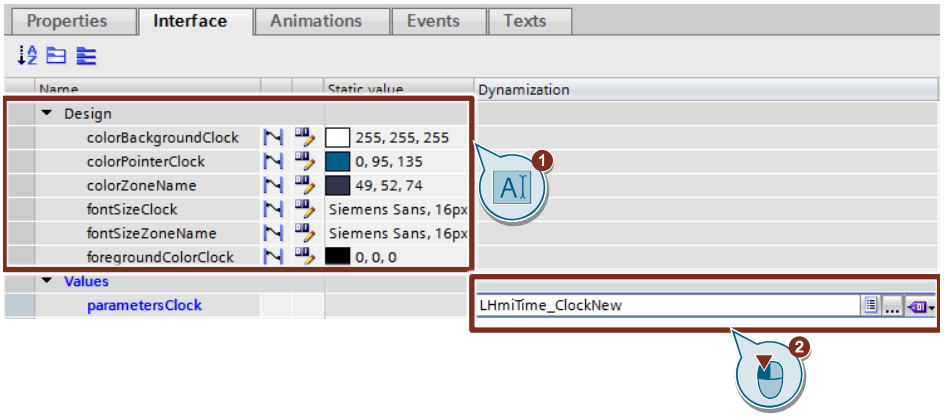
Figure 8-4



5. Select the faceplate and open the block interface with "Properties > Interface".

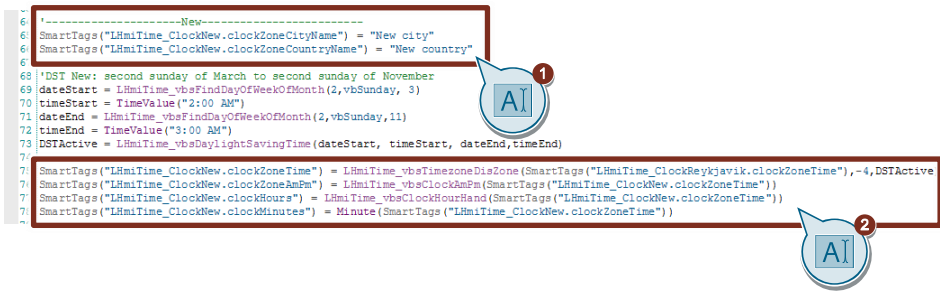
6. Specify the design parameters (background color, text size, etc.) in the "Design" category.
   Connect the created tag for the world clock parameters to the "Values" property of the "parametersClock" category.

   Figure 8-5



7. Open the script "LHmi_vbsWorldTimeClock".
   Copy one of the blocks (e.g. "LA") and insert it at the end of the script.
8. Replace the tags in the copied block with the newly inserted tags.

   Figure 8-6

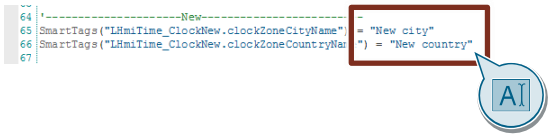


Note

Make sure that you do not change the tag "LHmiTime_ClockReykjavik.clockZoneTime".

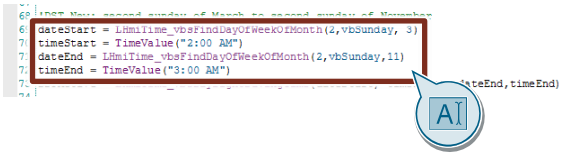
9. Change the zone name to your new zone name.

   Figure 8-7



10. Enter the values for the daylight saving time switchover of your time zone in "DateStart", "TimeStart", "DateEnd" and "TimeEnd" (parameters see section 8.1.3).

    Figure 8-8

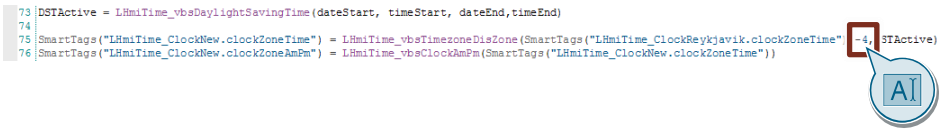


Note

If there is no switchover to daylight saving time in your time zone, replace the lines with "DSTActive = 0" (see example "India").

11. For the second parameter of the function "LHmiTime_TimezoneDisZone", enter the difference of your time zone to the UTC time (in hours).

    Figure 8-9

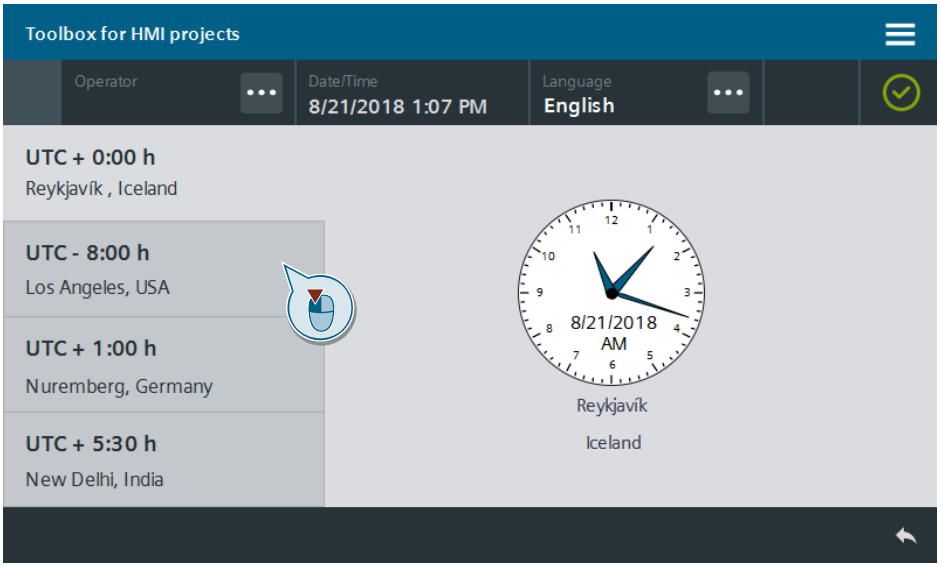


12. Call the script "LHmi_vbsWorldTimeClock" at the "Loaded" event of your screen.

8.3 Operation

1. Open the visualization on your operator panel or simulate it.
2. Open the Tools overview and click on the "Worldclock" button.
3. Use the page navigation on the left to switch between the individual regions.

   Figure 8-10



9 Data transfer – Chat function between operator panels

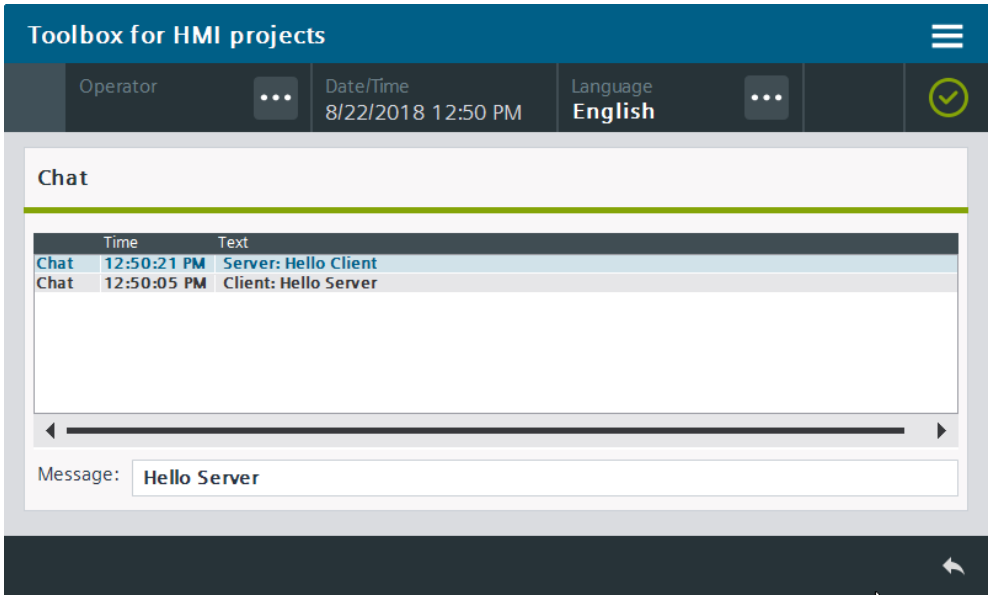
9.1 General description

You are working on an HMI device and would like to exchange information with the operator of a remote HMI device in real-time.

You can exchange of data between SIMATIC HMI devices with the "SIMATIC HMI HTTP" communication driver. To show the latest information, alarms are generated and displayed in an alarm view.

One HMI device is the server and the other the client in this scenario.

Figure 9-1



9.1.1 Hardware and software components

The application example is valid for:

- SIMATIC WinCC Comfort / Advanced V15.1
- SIMATIC Comfort Panels, Comfort PRO Panels, Outdoor Panels, Mobile Panels 2nd Generation
- SIMATIC WinCC RT Advanced V15.1

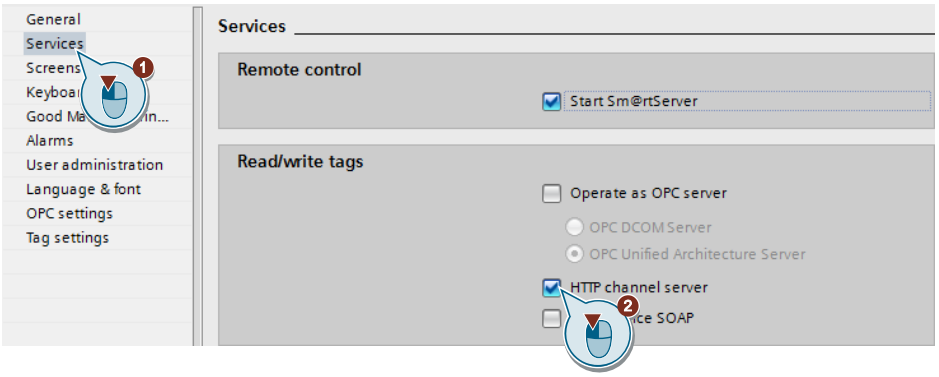
9.2 Integration into the user project

1. Open your WinCC configuration.

9.2.1 Chat server configuration

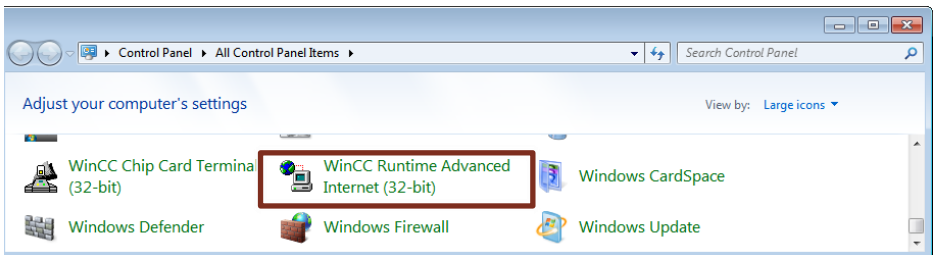
2. Open the Runtime settings of the HMI device that you want to use as server with "Project navigation > Runtime settings".
3. Under "Services", activate the "HTTP channel server" service.

Figure 9-2



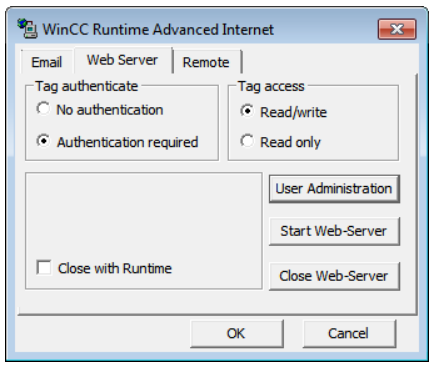
4. Compile your project and load it to your HMI device.
   The web server with its HTTP service is started on the HMI device.
5. Exit the ongoing runtime.
6. Open the "WinCC Internet Settings".
   - Panels: "My Computer > Control panel > WinCC Internet Settings"
   - WinCC RT Advanced: "Control Panel > WinCC Runtime Advanced Internet"

Figure 9-3



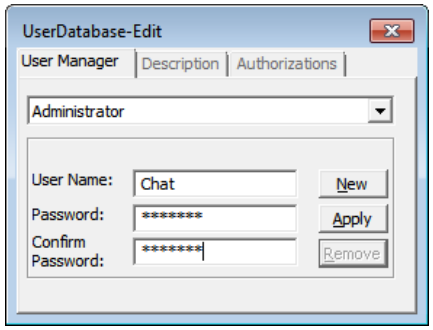
7. Select the "Web Server" tab and select the option "Authentication required". This option activates the password access to the web server.

   Figure 9-4



8. Open the user administration with a click on the "User Administration" button.
9. Create a new user with the "New" button.
   - User Name: Chat
   - Password: chat123
   - Confirm Password: chat123

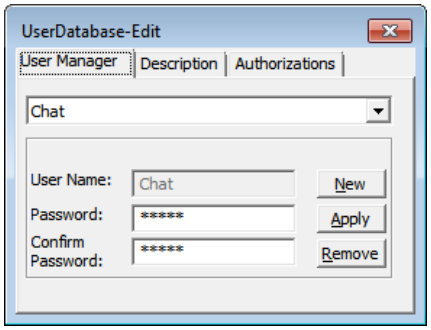
   Figure 9-5



   Click "Apply" to confirm your entries.

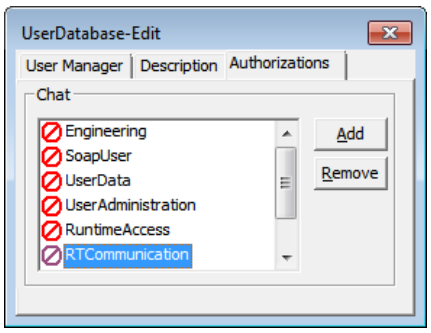
10. Select the user "Chat" and go to the "Authorizations" tab.

    Figure 9-6



11. Select the "RTCommunication" authorization and add it to the user with the "Add" button.

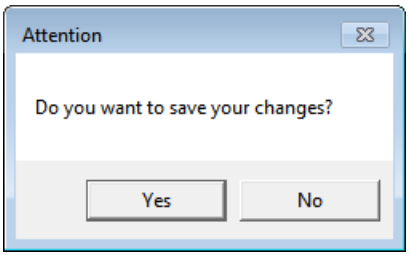
    Figure 9-7

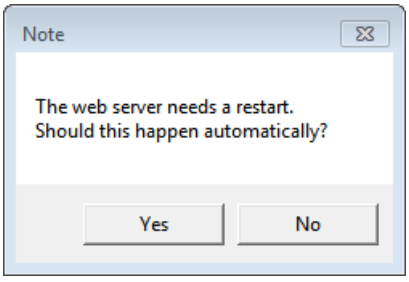


    Close the window with the "X" button.

12. Confirm the Note window to back up the authorizations and restart the web server with the "Yes" button.

    Figure 9-8

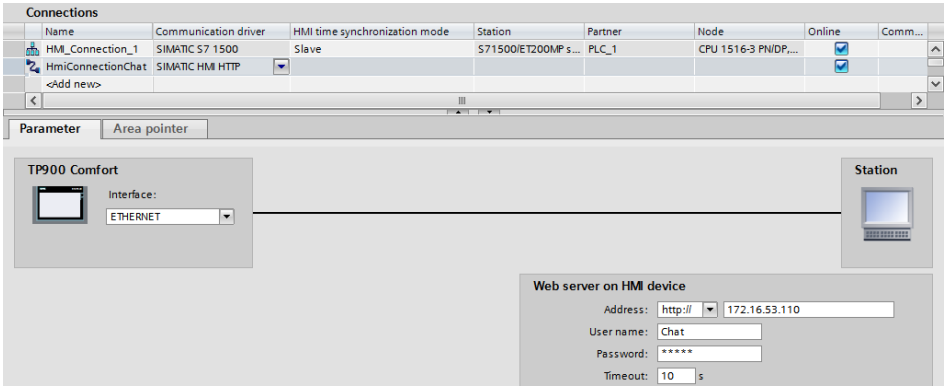




9.2.2 Chat client configuration

2. Open the Connections editor of the HMI device that you want to use as client with "Project navigation > Connections".
3. Create a new HTTP connection.
   - Name: HmiConnectionChat
   - Communication driver: SIMATIC HMI HTTP
4. Select the HTTP connection and change the communication settings.
   - Address: http:// <ip address chat server>
   - User Name: Chat
   - Password: chat123
   - Timeout: 10s

Figure 9-9



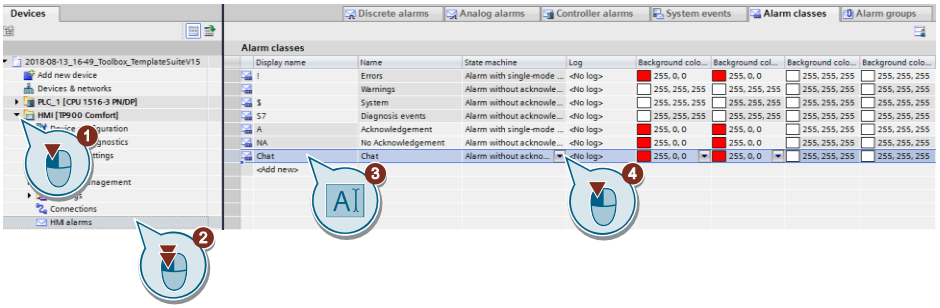
9.2.3 Chat client and chat server configuration

1. Open the editor for HMI alarms of the client operator panel via "Project navigation > HMI alarms".

   Go to the "Alarm classes" tab and create a new alarm class called "Chat".

   - Display name: Chat
   - Name: Chat
   - State machine: "Alarm without acknowledgment"
   - Background colors: Can be freely selected

   Figure 9-10



   Repeat step 1 for the HMI operator panel that you are using as server.

2. Open the library with the tools (section 2.3).
3. Open the folder "Master copies > 02_HMI > 03_Tools > LHmiData > Chat" of the library.

4. Drag the elements (Template, Screen, Tag table) to the corresponding folder of the operator panels (server and client).

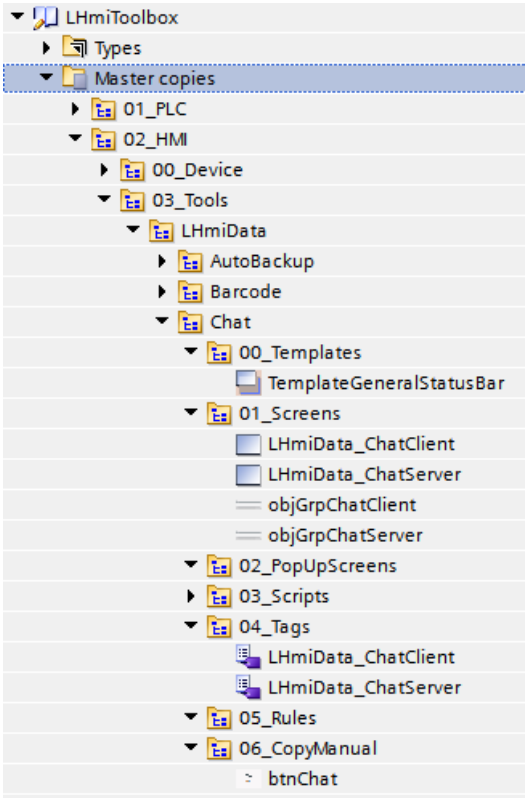
Server

- Template "TemplateGeneralStatusBar"
- Screen "LHmiData_ChatServer"
- Tag table "LHmiData_ChatServer"

Client

- Template "TemplateGeneralStatusBar"
- Screen "LHmiData_ChatClient"
- Tag table "LHmiData_ChatClient"

Figure 9-11



Note
If you want to use a pop-up screen, the screen object groups "objGrpChatClient" and "objGrpChatServer" are available as an alternative. You drag and drop the screen objects to a pop-up screen of your choice.

Open the tag table "LHmiData_ChatClient", select the tag "LHmiData_newMessage" and add an event for calling your pop-up screen under "Properties > Event > Value change".

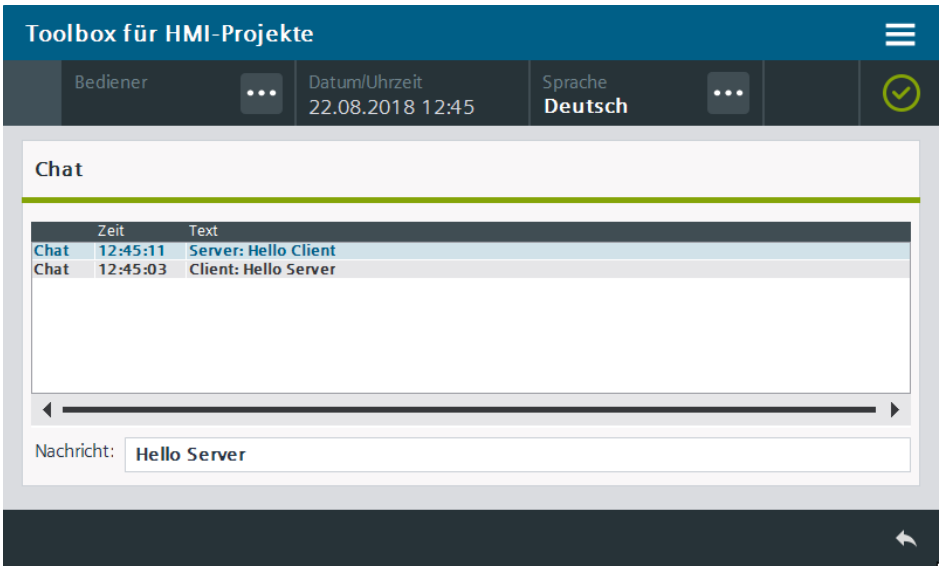
Repeat this step for the server operator panel (tag table: "LHmiData_ChatServer").

9.3 Operation

1. Download the example project to your HMI operator panels (**server:** WinCC RT Advanced, **client**: TP900 Comfort) and start both runtimes.

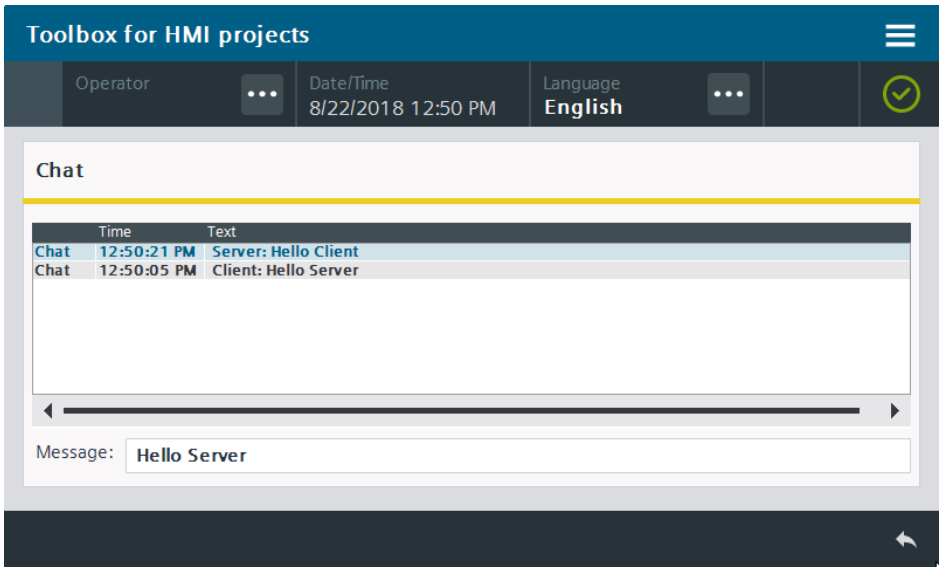
   If you only have access to one HMI operator panel, simulate the other HMI operator panel as an alternative.
2. Open the Tools overview of the TP900 Comfort and click on the "Chat" button.
3. Write a message of your choice. Confirm the entry with "Enter". In WinCC RT Advanced, the chat window opens with your message.
4. Reply to the TP900 Comfort with a message of your choice. The message is displayed in the chat window of the panel.

   Figure 9-12



5. Change the screen in WinCC RT Advanced. The status bar of the chat window in the TP900 Comfort is highlighted in yellow. If the chat window is open in both operator panels, the status bar is highlighted in green.

   Figure 9-13



10 Data transfer - Barcode

10.1 General description

To display a barcode using a SIMATIC HMI Panel / PC station with WinCC RT Advanced or to print out this barcode, you must install an appropriate font on your programming device.

You can find numerous providers of these fonts on the Internet. The "Code-39-Logitogo Version V1.0 (with width check)" font was used for the application example.
You can find additional information on this in the document list under \11\.

A screen with multiple text boxes is used to enter data for a delivery note. For illustration purposes, the barcodes of the previously entered texts are displayed. The entered data can be output on a printer as a barcode in form of a "log printout".

Figure 10-1

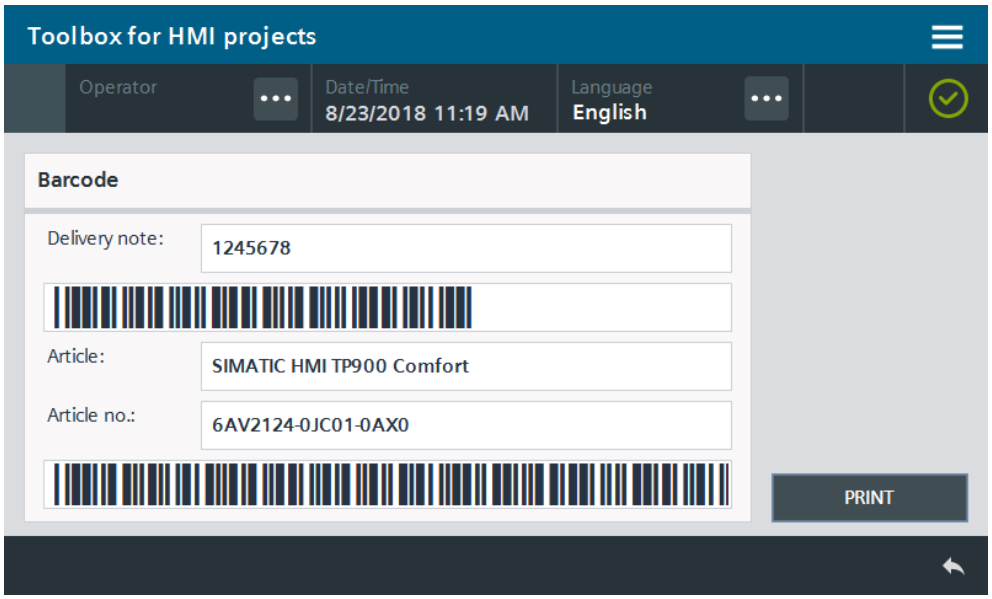


Figure 10-2

The barcode is created by direct input using a "TrueType font". Depending on the respective barcode type, a start and stop character is expected. This is the "*"character for the font used in the example project.

For detailed information on the design of the different barcode fonts, please refer to the appropriate font documentation.

10.1.1 Hardware and software components

The application example is valid for

- SIMATIC WinCC Basic / Comfort / Advanced V15.1
- SIMATIC Comfort Panels, Comfort PRO Panels, Outdoor Panels, Mobile Panels 2nd Generation
- SIMATIC WinCC RT Advanced V15.1

10.1.2 VBS scripts used

This section explains the functions of the scripts used in the tool.

"LHmiData_AddStartStopSign"

The script "LHmiData_AddStartStopSign" adds a "*" as start and stop character to the entered string tags and saves this string in the HMI tag for the barcode.

10.2 Installing the barcode font

10.2.1 Installation in Windows

There are three options to install the font in Windows.

Download the barcode font from the homepage of a manufacturer of your choice.

Note

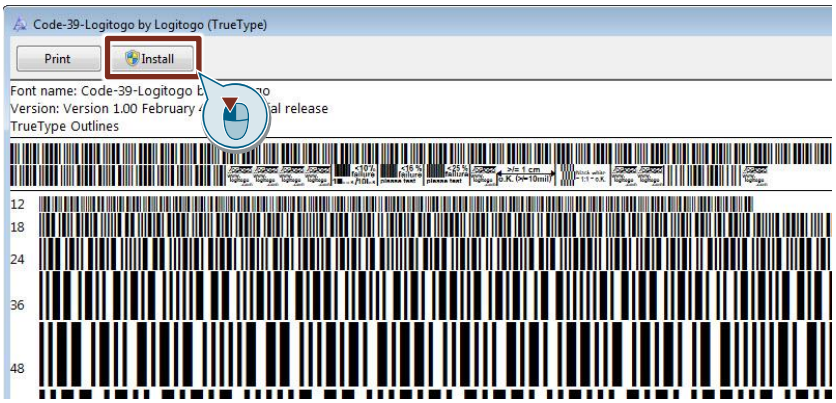
Close all instances of the TIA Portal prior to the installation.

If an instance of the TIA Portal was open during the installation of the font, close the TIA Portal and then restart it.

Option 1

1. Open the file with the barcode font by double clicking it. The font preview opens.
2. Click "Install".

Figure 10-3



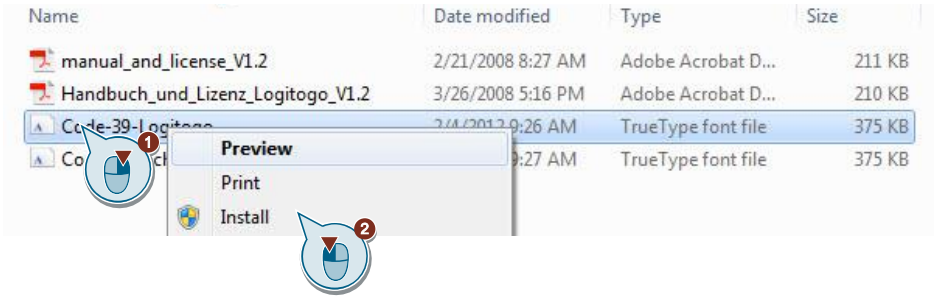
Note

You need to have the required administrator rights to do this.

Option 2

1. Open the context menu of the barcode font and install the font with "Install".

Figure 10-4



Note

You need to have the required administrator rights to do this.

Option 3

1. Select the file for the barcode font and copy the file using the key combination <Ctrl> + <C>.
2. Open the "Fonts" folder in the Control Panel.
3. Add the "*.ttf" file of the font with the key combination <Ctrl> + <V>.

10.2.2 Installation on Basic / Comfort Panels

Automatic transfer by downloading the configuration

The font is transferred to the panel along with the project and therefore must not be installed on the panel manually. The project contains the necessary data during download to the operator panel.

The font is not saved in the font folder of the HMI operator panel. This means that the font is not recognized on the HMI operator panel outside of Runtime.

Manual installation (optional)

If you want to use the font outside of Runtime (RT), for example, display a Word file with characters of this font on the operator panel, install the font manually.

1. Copy the file of the barcode font to a storage medium of your choice and connect it with your HMI operator panel.
2. Open the Explorer via "Desktop > My Computer".
3. Go to your storage medium and copy the barcode font file.
4. Open the "Windows > Fonts" folder.
5. Add the barcode font file to the "Fonts" folder.

Note

The installed font is only available for a few specific applications.

You cannot change the system font for panels.

10.2.3 Integrating a font into your project

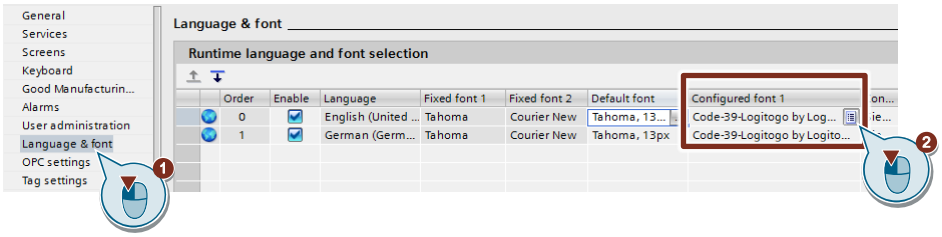
Note

When you configure a PC station with SIMATIC WinCC RT Advanced, you do not have to integrate the font. You only have to install the font on the operating system. All installed fonts of the Windows operating system are available for the configuration.

To use the barcode font, integrate it as configured font into your HMI project.

1. Open the folder of your operator panel in the project tree.
2. Open the "Runtime settings" with a double-click.
3. Select "Language & font".
4. Select the cell under "Configured font 1".
5. Click on the selection icon "[…]" and select the barcode font from the fonts installed on the operating system.
6. If necessary, apply the settings for additional configured languages.
7. Restart the TIA Portal and reopen your project.

Figure 10-5



Note

With Basic Panels you can configure your own "Configured font 1" in addition to the system font.

With Comfort Panels you can configure up to two separate fonts "Configured font 1" and "Configured font 2" next to the system font.

10.2.4 Using a font

Setting the font, font style and font size

You have to manually customize the font, as well as associated font style and font size for basic objects and elements.

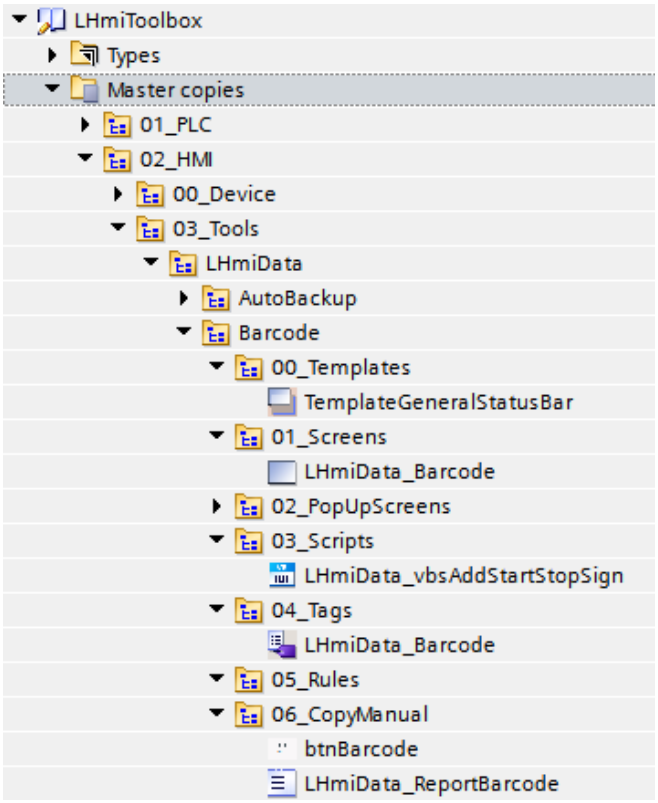
1. Select a basic object.
2. Click on "Properties > Text format".
3. In "Format > Font", click the "…" button.
4. Select the barcode font and set "Font style" and "Size" as desired.
5. Click on "OK".

10.3 Integration into the user project

Note The correct installation of the barcode font on your panel/your PC station, as well as the integration into your WinCC project is a prerequisite for the integration. To do this, follow the description from chapter 10.2.

1. Open your WinCC configuration and the library with the tools (Section 2.3).
2. Open the folder "Master copies > 02_HMI > 03_Tools > LHmiData> Barcode" of the library.
3. Drag the elements (Template, Screen, Script, Tag table, Log) to the corresponding folder of the operator panel.

Figure 10-6



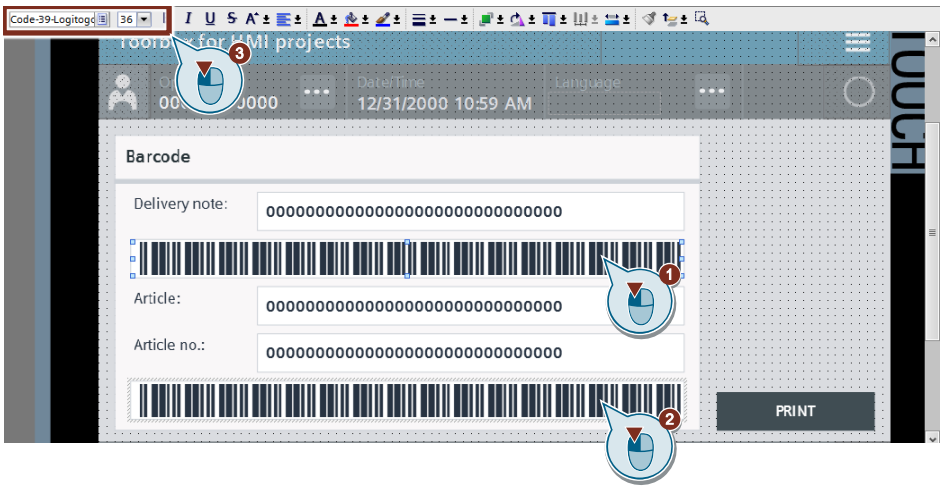
Note

Depending on the size of the HMI operator panel, it may be necessary to adapt the screens.

4. Drag the "btnBarcode" button from the library to your screen. You open the tool with this button.
5. Check the integration into your barcode font under "Project navigation > Runtime Settings > Language & fonts" (chapter 10.2.3).
6. Open the "LHmiData_Barcode" screen with "Project navigation > Screens".
7. Select the I/O fields "ioBarcodeDeliveryNo" and "ioBarcodeArticleNo" and open the settings for the text format.

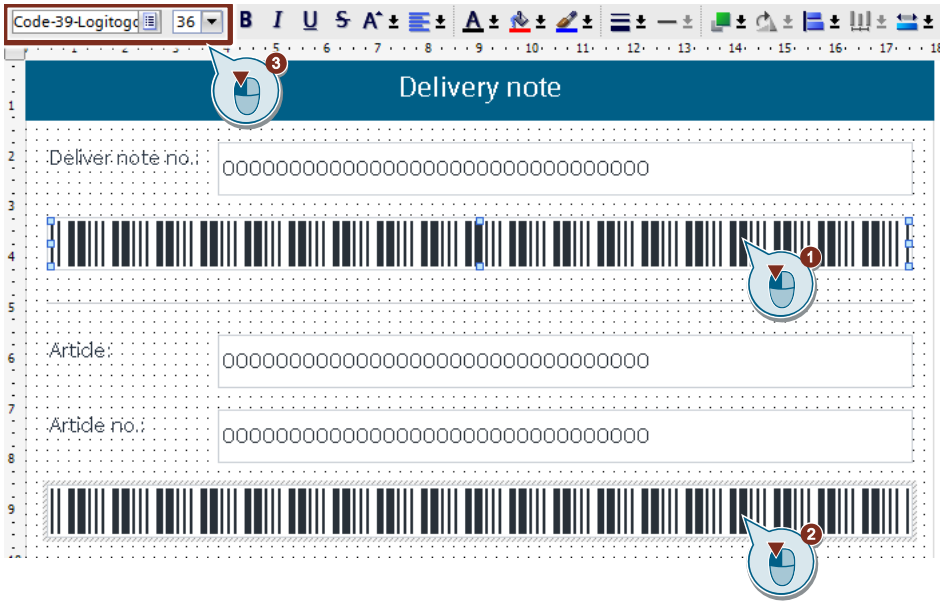
8. Select the barcode font as text format using the menu bar of the screen editor and a suitable size.

   Figure 10-7



9. Open the "LHmiData_ReportBarcode" report with ("Project navigation > Reports").
10. Select the I/O fields "ioBarcodeDeliveryNo" and "ioBarcodeArticleNo" and open the settings for the text format.
11. Select the barcode font as text format using the menu bar of the screen editor and a suitable size.

    Figure 10-8

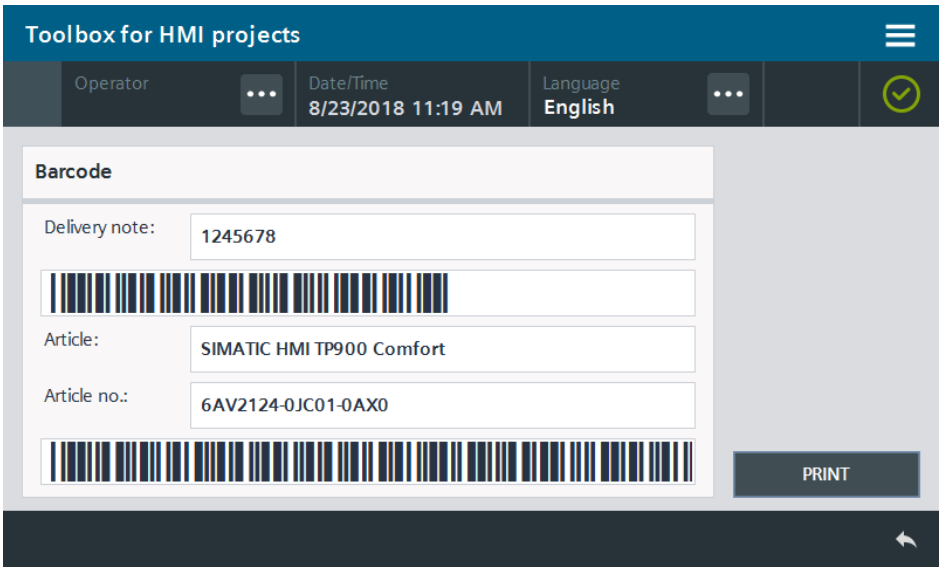


10.4 Operation

Note Requirement for operation is the correct integration into the user project. To do this, follow the description from chapter 10.3.

1. Open the visualization on your operator panel or simulate it.
2. Open the Tools overview and click on the "Barcode" button.
3. Enter a delivery note number, an article name and the article number. Confirm your entry with "Enter". The I/O fields show the associated barcodes.

   Figure 10-9



4. Print the report with the current parameters by pressing the "PRINT" button. A dialog window for saving the report appears.

   Note

   Specify a default printer beforehand. Otherwise, you will see an error message.

5. Save the report at a storage location of your choice.

11 Data transfer – QR Codes

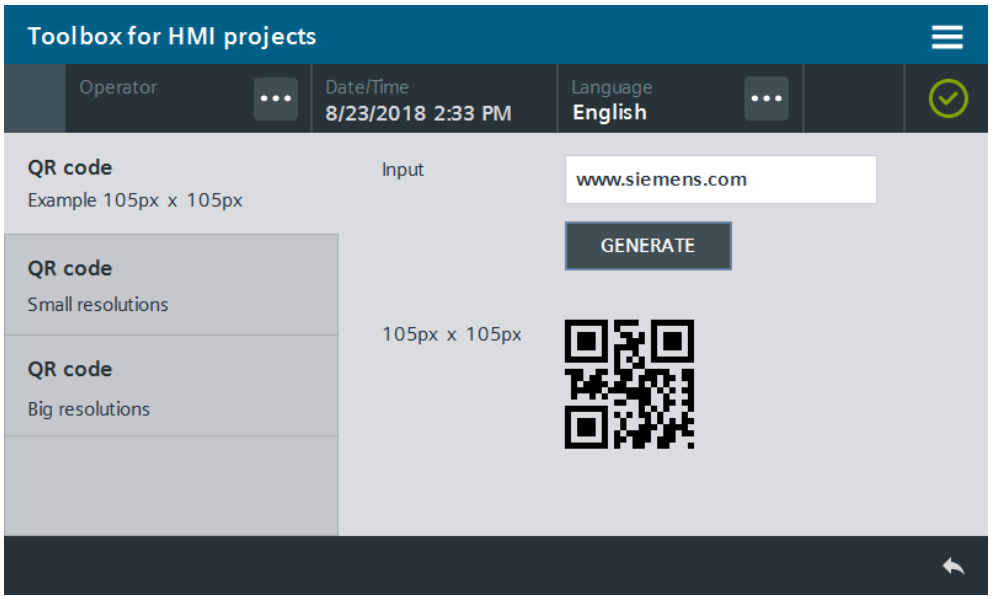
11.1 General description

It is often useful to transfer information from operator panels or controllers to a cell phone or tablet PC.

An option should be used without having to integrate the cell phone or tablet PC into the automation network.

The Comfort Panel generates a QR code from the information to be transferred. The QR code can be read and interpreted by the cell phone or tablet PC.

Figure 11-1



11.1.1 Hardware and software components

The application example is valid for:

- SIMATIC WinCC Comfort / Advanced V15.1
- SIMATIC Comfort Panels, Comfort PRO Panels, Outdoor Panels, Mobile Panels 2nd Generation
- SIMATIC WinCC RT Advanced V15.1

11.1.2 Basics

Structure of the QR code used

Table 11-1

QR code (marked with color)	Meaning
	**Encoding type** This QR code uses eight bit per character. This makes it possible to represent most ASCII characters. The encoding type is "0100" in binary format. The property cannot be changed.
	Length Specifies the number of characters used in the QR code. This code always contains 17 characters. (If fewer characters are used, the script will add the missing characters.)
	Data blocks The data blocks contain the encoded information. Based on the ASCII table, each character is converted into a byte and encoded in these blocks.
	Error blocks The error blocks contain the error number of the "Reed-Solomon" algorithm \8\.
	Formatting The formatting blocks contain information on the QR code structure. This application uses a simple structure. (Error level: L Mask pattern: i%2 = 0 Meaning: The black blocks change the value depending whether the number is even or odd.)

11.1.3 VBS scripts used

This section explains the functions of the scripts used in the tool.

"LHmiData_vbsGenerateQRCode"

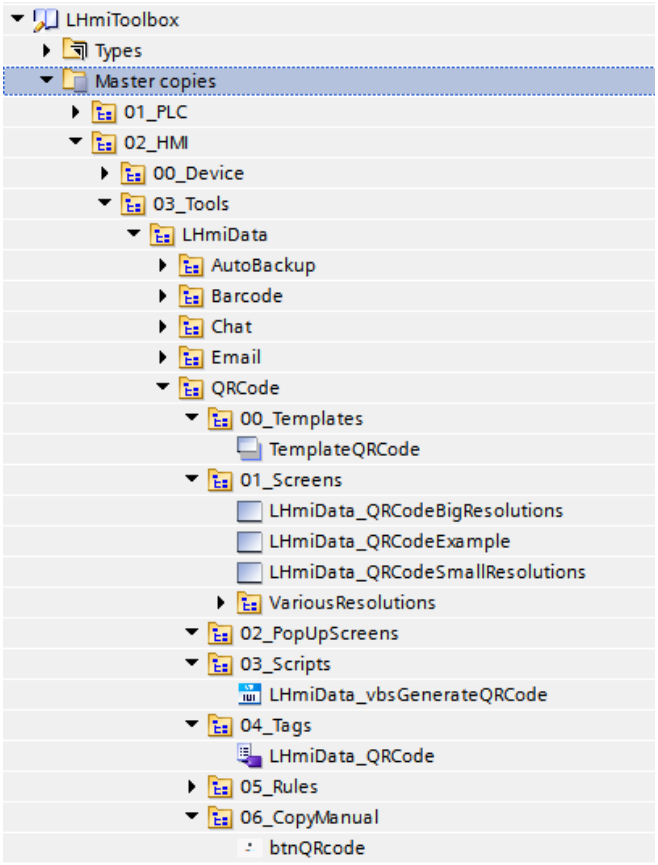
Depending on the defaults or the settings you have made, described in greater detail
in chapter 11.2, the script calculates the binary code of the tag to be represented "LHmiData_textForQRCode".
In addition, other information (information on error correction) is converted according to the "Reed-Solomon" algorithm (document list under \8\) The result of the script is displayed using the "visibility" property of the individual elements (squares) of the QR code.

11.2 Integration into the user project

1. Open your WinCC configuration and the library with the tool (Section 2.3).
2. Open the folder "Master copies > 02_HMI > 03_Tools > LHmiData > QRCode" of the library.
3. Drag the elements (Template, Screens, Script, Tag table) to the corresponding folder of the operator panel.

   The "VariousResolutions" folder contains various resolutions of the QR code. Alternatively, you can also use a different resolution. Simply drag and drop the grouping to your screen selection.

   Figure 11-2



   Note

   Depending on the size of the HMI operator panel, it may be necessary to adapt the screens.

4. Drag the "btnQRCode" button from the library to your screen. You open the tool with this button.
5. Open the VBS script "LHmiData_vbsGenerateQRCode".
6. In line 34 of the script, check the name of the screen on which you have used the QR code and adapt it, if necessary.
   (In the example: "LHmiData_QRCodeExample")

   Figure 11-3

```
33 '##############Initialize Static Global Variables#########################
34 SCREEN_NAME = "LHmiData_QRCodeExample"
```

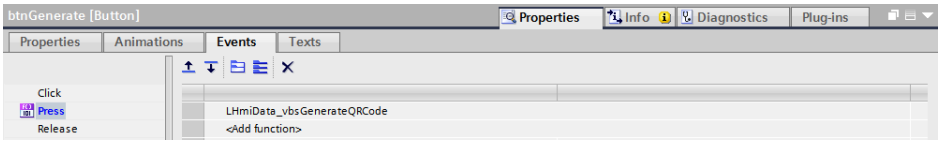
7. In line 54 of the script, check the name of the tag that you want to convert into the QR code and adapt it, if necessary (in the example: " LHmiData_textForQRCode ").

   Figure 11-4

```
53 '##############Normalize String###################
54 ENCODE_STRING = SmartTags("LHmiData_textForQRCode")
```

8. Open the "LHmiData_QRCodeExample" screen.
9. Connect the script "LHmiData_vbsGenerateQRCode" to the "Press" event of the "GENERATE" button.

   Figure 11-5

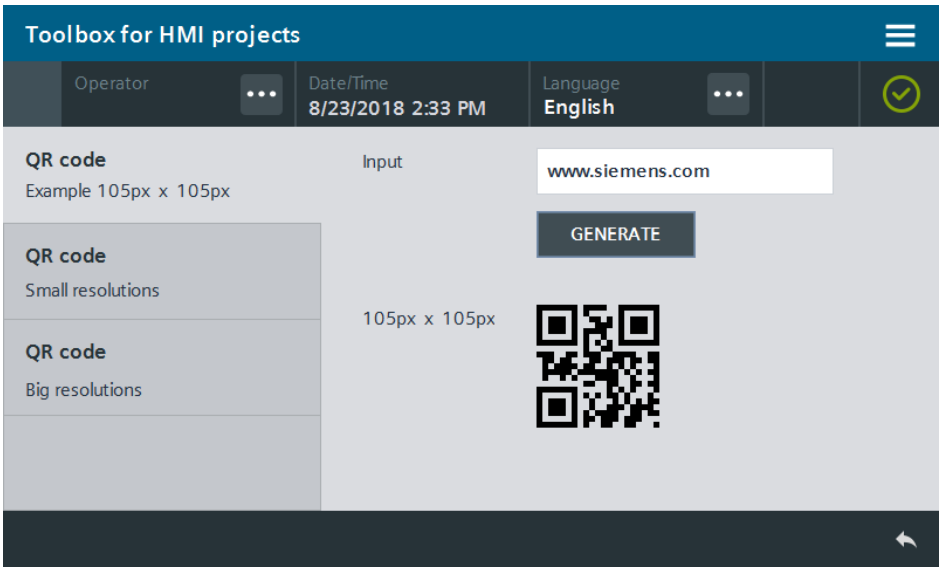


11.3 Operation

1. Download the visualization on your operator panel or simulate it.
2. Open the Tools overview and click on the "QR code" button.
3. Enter a random text into the I/O field. The text is limited to 17 characters.

   Then press the "GENERATE" button. The QR code is generated.

   Figure 11-6



4. Use the page navigation on the left to view the possible resolutions of the QR code. These are not connected to the tag.

12 Data transfer – Sending Emails

12.1 General description

As not all machines of a plant are permanently monitored by staff, it is often not possible to promptly react to pending alarms on the operator panel. This problem is to be solved by an automatic email notification.

With this tool you integrate automatic emails for a three-shift system as well as manual emails for Comfort Panels. With automatic emails, the employee in charge is notified directly via email as soon as a specific analog alarm occurs.

The address of the recipient is determined by the shift schedule in this case. At the time of a shift change, the active email takes over the set email of the active shift via the scheduler.

An email is automatically sent in case of a specific analog alarm with this tool. As an alternative to the individual alarm, you can also define an alarm class for sending emails. If an alarm of this alarm class occurs, an alarm is sent to the respective recipient. In this case, you will not need to activate the "Send email" function multiple times.

Figure 12-1

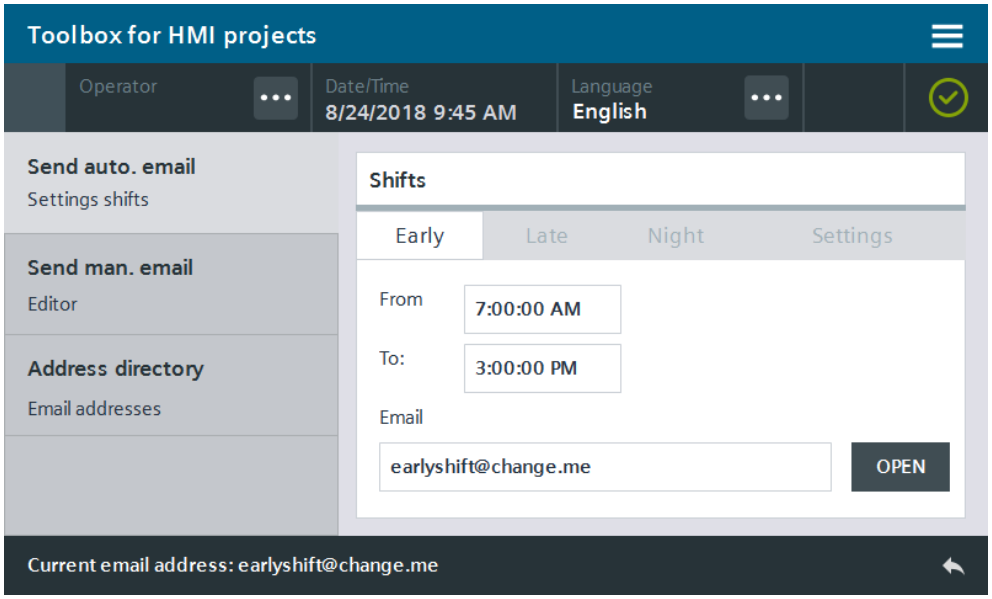
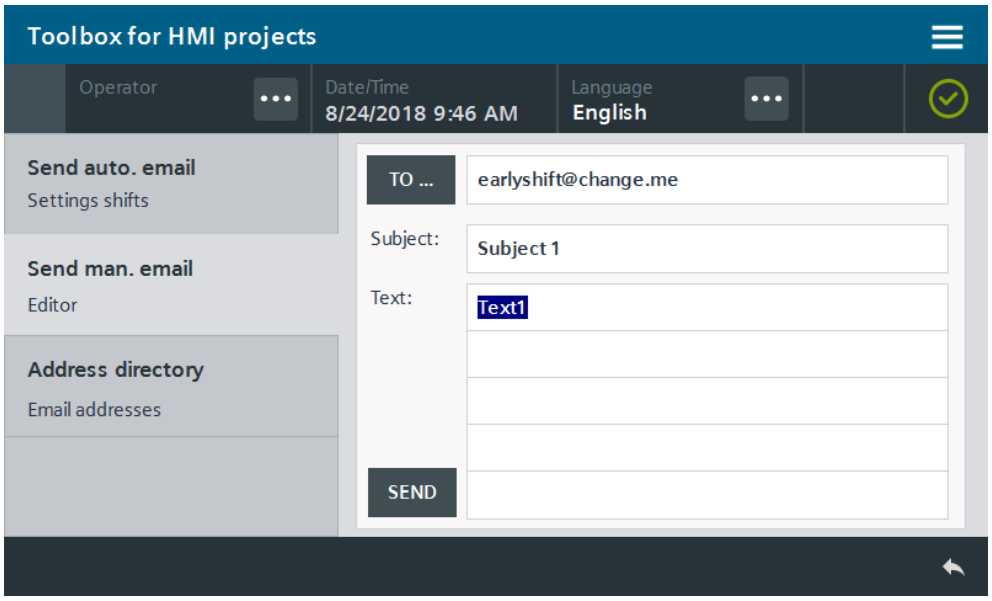
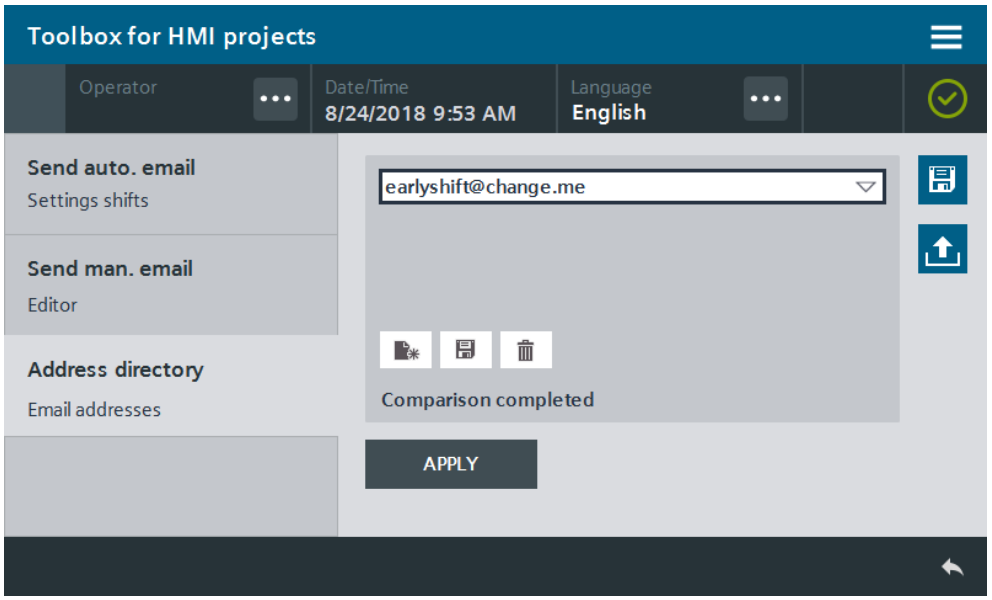


Figure 12-2



Email addresses are reliably backed up using recipe management in the operator panel so that they are still available after a restart.

Figure 12-3



12.1.1 Hardware and software components

This application example is valid for:

- SIMATIC WinCC Comfort / Advanced V15.1
- SIMATIC Comfort Panels, Comfort PRO Panels, Outdoor Panels, Mobile Panels 2nd Generation
- SIMATIC WinCC RT Advanced V15.1

12.2 Basics

12.2.1 SMTP service and server

This tool uses the SMTP service (SMTP: Simple Mail Transfer Protocol) of the operator panel.

The operator panel establishes an SMTP connection to a SMTP server in the network or the Internet with this service. The SMTP server, or email server, is a server that sends emails. After the connection has been established, the operator panel transfers the recipient address, subject line and text content of the email to the server.

You specify the SMTP communication settings for the service in the Runtime settings in the operator panel. You can find these settings under "Project tree > Runtime settings > Services".

Figure 12-4

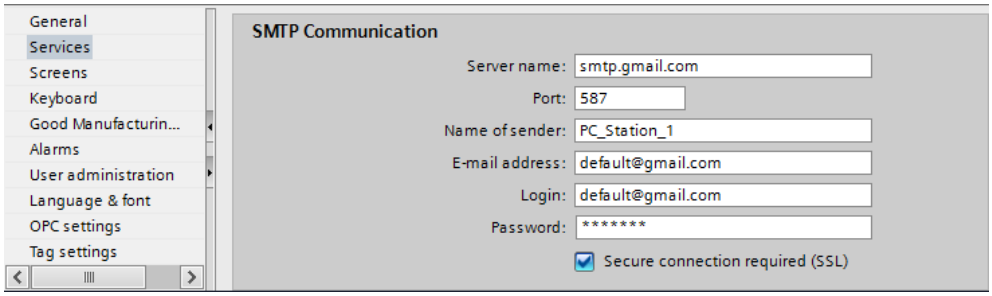


Table 12-1

Field	Explanation
Server name	SMTP server of the email service provider or your own email server. Please note: When using a Comfort Panel, the SMTP server can only be specified as a computer name or fully qualified domain name (FQDN); it cannot be entered as an IP address.
Port	SMTP server port used for sending email.
Sender name	This plain text name is entered as the sender of the email and can be defined as required; for example, "Hall1", "Panel123", etc.
Email address	Email sender address
Log in	Use the login data you defined when you created the email account.
Password	Use the password you defined when you created the email account.
Secure connection required (SSL)	Use of the SSL protocol (see below)

The information relates to the email sender. You can use any provider for the recipient address(es).

12.2.2 Encrypted message transmission using SSL

Unencrypted messages are not considered as secure because they can be read by third parties. For this reason, most SMTP servers accept requests for sending emails only if these requests are processed using the encrypted SSL protocol ("Secure Sockets Layer").

To enable SSL, proceed as follows:

1. In the dialog of Figure 12-4, check "Secure connection required (SSL)".
2. Change the value for "Port" to the port reserved for SMTP by your provider.

Most SSL servers use port 587 for SSL transmission. If sending emails with this port fail, consult your email service provider for the correct settings.

12.2.3 Verifying the correct port for sending email

If you are not sure whether your provider supports SSL or communicates via port 587, perform the following steps on a PC connected to the Internet via the same subnet as your operator panel:

1. Open the Windows Command Prompt.
2. Enter the command line "telnet [SMTP server name] 587". (Replace "[SMTP server name]" with the actual server name.)

   Note

   The "Telnet" tool is not enabled by default on all Windows installations. If the command is not known to your command prompt, use "Control Panel > Programs and Features > Turn Windows features on or off" to enable Telnet in Windows 7.
   On other Windows versions, the path may differ slightly.

3. If a message appears that a connection cannot be established, port 587 of your server is blocked.

In this case, change the port to the value specified by your email service provider or use a different email service provider.

Note If your provider does not support SSL yet, port 25 is used by default for sending emails. If this is the case, set "Port" to "25" as shown in Figure 12-4 and uncheck "Secure connection required (SSL)".
Please note your emails are transmitted unencrypted in this case.

12.2.4 Settings on the HMI operator panel

The operator panel must be configured for connection to the Internet.

Follow the device manual instructions (for Comfort Panels, see manual in the document list \5\ for correct setting of the parameters).

Make sure that the panel network access is not restricted by domain policies or firewalls. If necessary, contact your domain administrator.

12.2.5 Forwarding emails as SMS text messages

General

Various mobile network operators offer a service that assigns an email address to a cell phone number of their network. Emails sent to this address are then converted to SMS text messages and forwarded to the mobile device in this format. This allows you to receive emails on a cell phone or smartphone without having an email client installed.

Note The maximum length of an SMS text message is 160 characters as always. Longer emails are normally truncated by the provider.

Enabling and disabling notification by SMS text message

For an email to be converted into an SMS text message, the appropriate service must be signed up for with the mobile network operator. Using the example of T-Mobile, the following sections describe how to do this.

- **Enabling reception of email with a provider:**
  Send an SMS text message with the text "**OPEN**" to the T-Mobile speed dial number **8000**. This opens your T-Mobile number for email reception.
  And the email address assigned to your cell phone is:
  T-Mobile phone number (incl. area code)@t-mobile-sms.de
  e.g. 017100000000@t-mobile-sms.de.
- **Disabling email reception:**
  If you no longer want to receive emails, send an SMS text message with the text "**CLOSE**" to the T-Mobile speed dial number **8000**.

The above steps may be different for other mobile network operators. Changes on the HMI operator panel are not necessary.

Other mobile network operators

The following table lists a selection of providers offering SMS notification services. This list does not claim to be complete.

Table 12-2 lists:

- The keywords for the activation/deactivation message of the notification service,
- the speed dial number to which the activation/deactivation message has to be sent,
- the email address from which the received messages are forwarded as SMS text messages (replace the “[No]” with the appropriate cell phone number).
- the individual providers’ websites

Table 12-2

	Vodafone	O_2
Start/end of service	OPEN / CLOSE	+START / STOP
Speed dial	3400	6245
Email address	[No]@vodafone-sms.de	[No]@o2online.de
Website	http://www.vodafone.de	http://www.o2online.de

For more detailed information, please contact the respective provider. and obtain information on the "Enable cell phone for receiving email from the Internet" function.

12.3 VBS scripts used

This section explains the functions of the scripts used in the tool.

LHmiData_vbsReadSavedValues

The script "LHmiData_vbsReadSavedValues" restores the last saved settings of the shift schedule. To do this, the script reads the content of the "LHmiData_ShiftAddressesTimes.txt" file and writes it to the associated tags.

LHmiData_vbsSendEmailMan

This script is used for sending an email manually. The script reads the entered recipient address as well as subject and text and sends the email via SMTP service.

LHmiData_vbsStartUp

When the start screen is opened for the first time, this script will be run once. It is used for saving and reading the email addresses for the shift schedule and the start times of the shifts.

If the file does not exist yet, the script creates the "LHmiData_ShiftAddressesTimes.txt" file with start values for the shift times and addresses.

LHmiData_vbsWriteCurrentValues

The script saves the current settings of the shift schedule in the "LHmiData_ShiftAddressesTimes.txt" file.

LHmiData_vbsTransferAddressFromDirectory

This script changes the email address of the selected shift time. It replaces the email address of the shift time by the one selected from the recipe.

The emails are saved in a recipe as data records. You can expand the recipe by any number (max. 5000) of new emails.

Note

The configuration of the file system differs, depending on the operating system (Windows / Windows CE) of your HMI operator panel.

As a result, the storage of the "LHmiData_ShiftAddressesTimes.txt" file is also different.

- Panels path: \flash\106226404_Tools\
- WinCC RT Advanced path: C:\106226404_Tools\

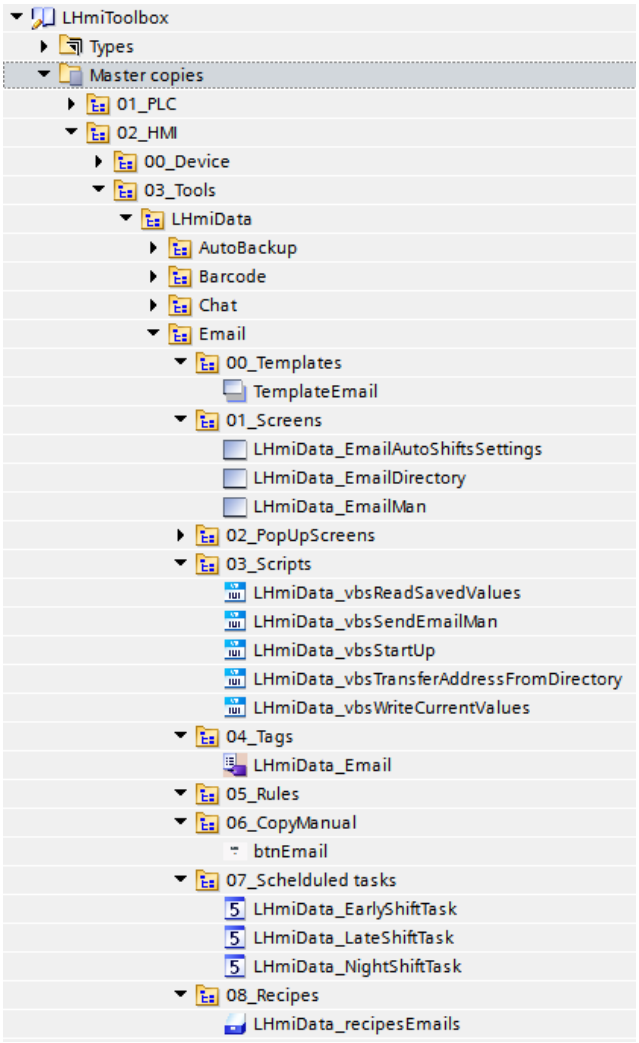
The same is the case for the "LHmiData_recipesEmails" recipe that saves the email addresses as data records.

- Panels path: \flash\106226404_Tools\Recipes
- WinCC RT Advanced path: C:\106226404_Tools\Recipes

12.4 Integration into the user project

1. Open your WinCC configuration and the library with the tools (Section 2.3).
2. Open the folder "Master copies > 02_HMI > 03_Tools > LHmiData > Chat" of the library.

   Figure 12-5



3. Drag the elements (Template, Screens, Scripts, Tag table, Tasks, Recipe) to the corresponding folder of the operator panel.

   Note

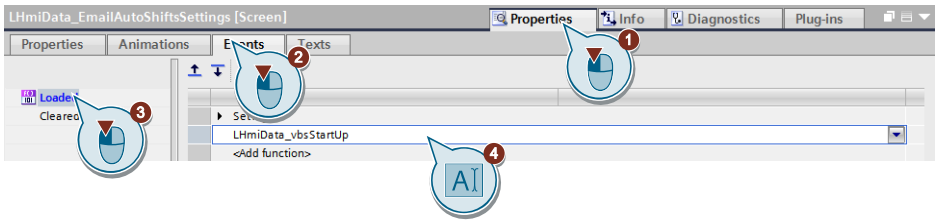
   Depending on the size of the HMI operator panel, it may be necessary to adapt the screens.

4. Drag the "btnEmail" button from the library to your screen. You open the tool with this button.

5. Open the "LHmiData_EmailAutoShiftsSettings" screen. Add the "StartUp" script for the "Loaded" event of the screen.

   Alternatively, you can also connect the script to the "Loaded" event of the start screen.

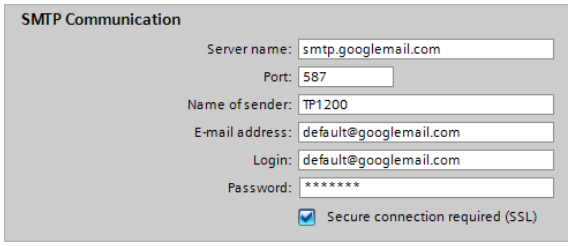
   Figure 12-6



6. Open the Runtime settings of your HMI operator panel.
7. Under "Services" enter your SMTP communication data (see chapter 12.2.4)

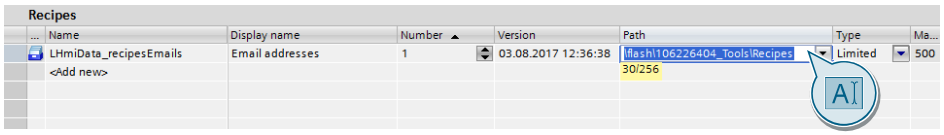
   Alternatively, you can make the SMTP settings in the panel control panel.

   Figure 12-7



8. Open the recipe editor with "Project navigation >Recipes".
9. Change the path for the recipe "LHmiData_recipesEmails" depending on the operator panel used.
   - WinCC RT Advanced: C:\106226404_Tools\Recipes
   - Panels: \flash\106226404_Tools\Recipes

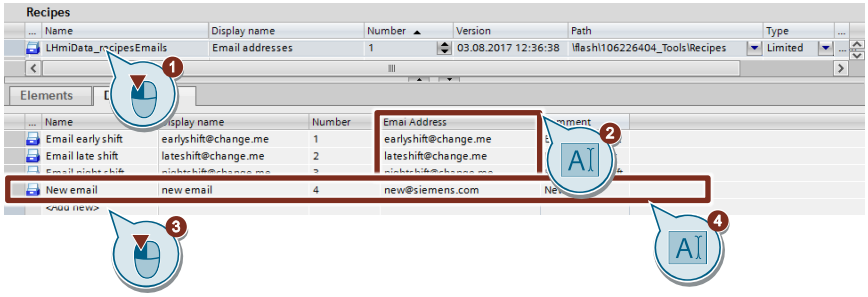
   Figure 12-8



10. Select the recipe and open the editor for the data records above the Data records tab.

    Change the email addresses for the shifts to email addresses of your choice or use "<Hinzufügen>" to add additional email addresses for the address book.

    Figure 12-9

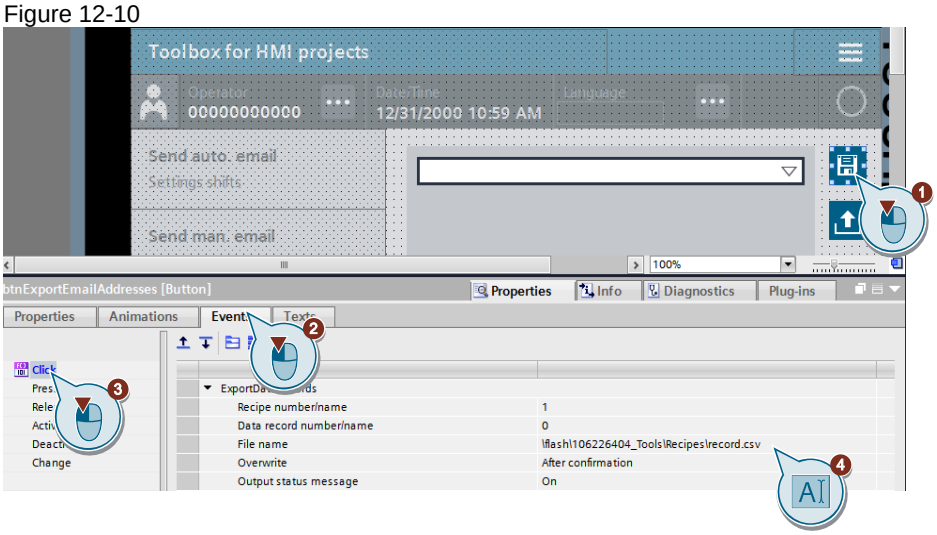


11. Open the "LHmiData_EmailDirectory" screen.
12. Select the Save button and open the results of the button.

Adjust the path to your operator panel for the "File name" transfer parameter of the "ExportDataRecords" system function.

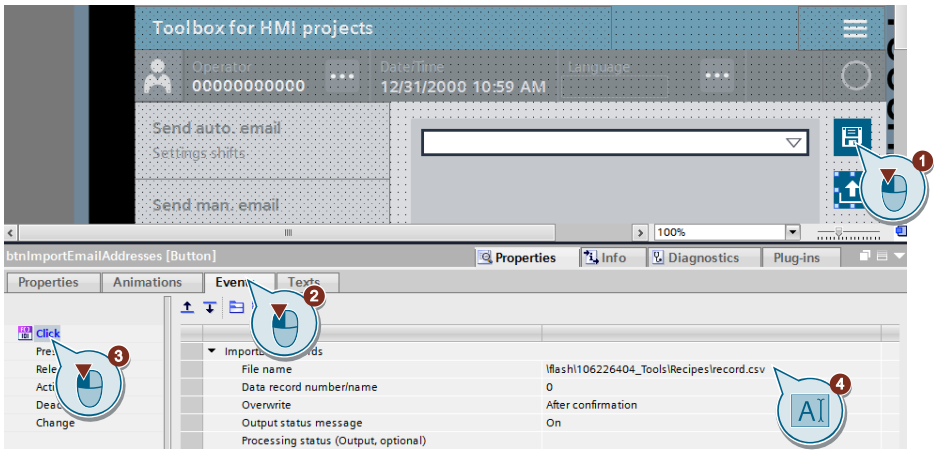
- WinCC RT Advanced: C:\106226404_Tools\Recipes
- Panels: \flash\106226404_Tools\Recipes

Figure 12-10



13. Repeat step 12, the Load button and the "ImportDataRecords" system function.

Figure 12-11



12.5 Operation

Note

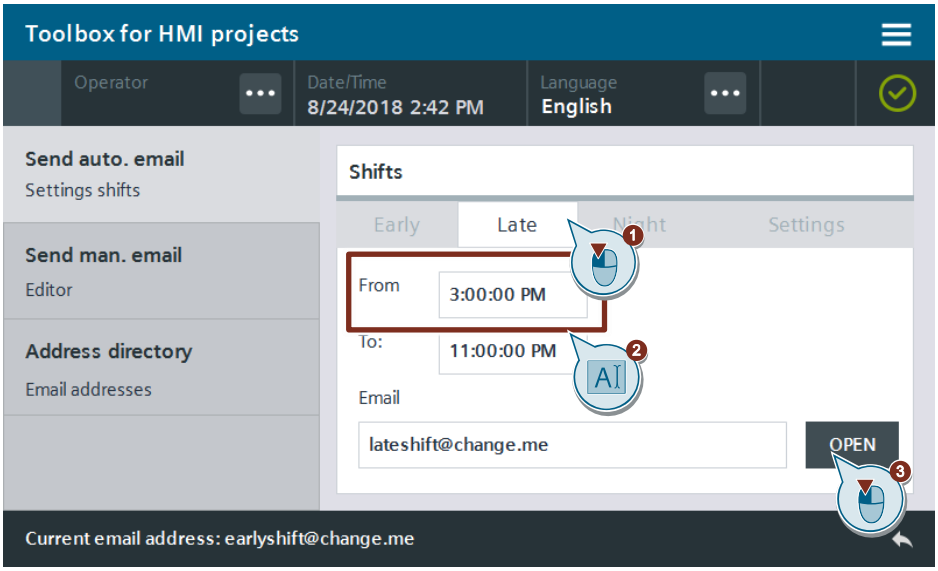
A requirement for these chapters is the correct configuration of the SMTP communication settings and accessibility of the SMTP server via the panel / WinCC RT Advanced.

Make sure that all requirements are met before you download the example project.

1. Open the visualization on your operator panel or simulate it.
2. Open the Tools overview and click on the "Chat" button.
3. Switch to the settings of the late shift with the "Late" button. Set the time when the late shift starts. The time for the shift end is automatically the start time of the next shift.

   Press the "OPEN" button to open the email address book.

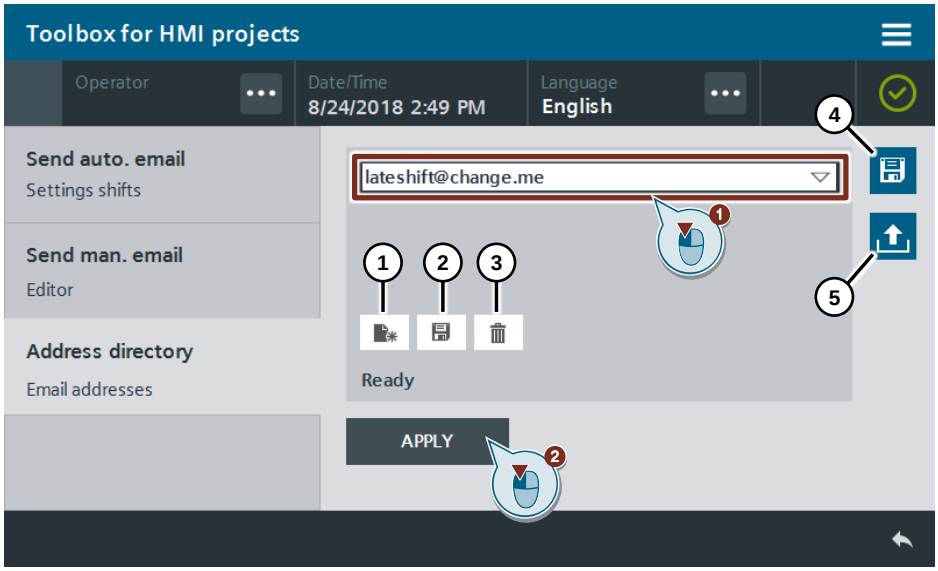
Figure 12-12



Select an address from your address book and confirm the selection with the "APPLY" button.The selected email address is added to the shift settings.

In the status bar you can see the email address that is currently used.

Figure 12-13



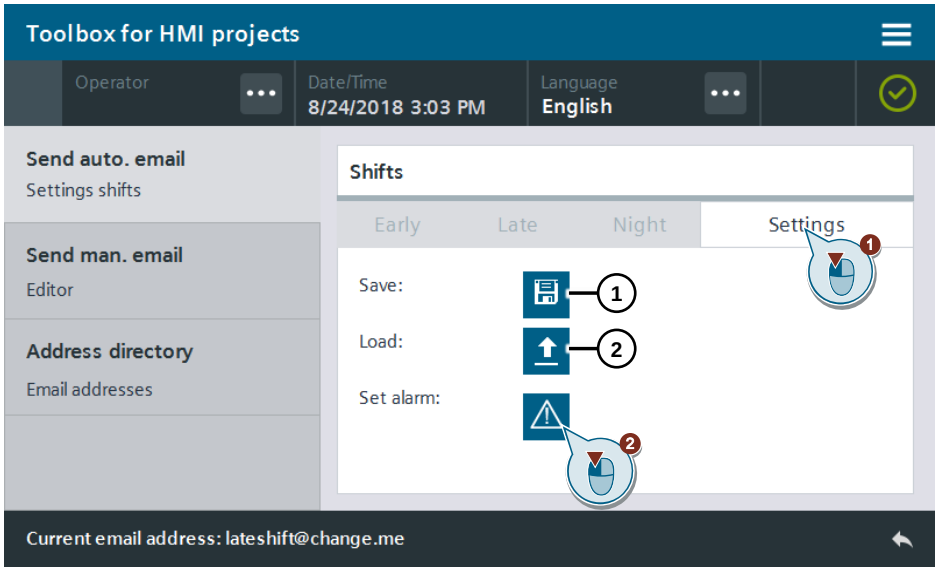
Note

Using the buttons of the recipe view, you can add new data records (email addresses) (1), save them (2) and delete existing ones again (3).

You use the Save button (4) to export the data records to your operator panel. You use the Load button (5) to import the data records saved on the operator panel to your operator panel.

4. Go to the general shift settings via the "Settings" tab.
Trigger the email alarm with the Alarm button.

Figure 12-14

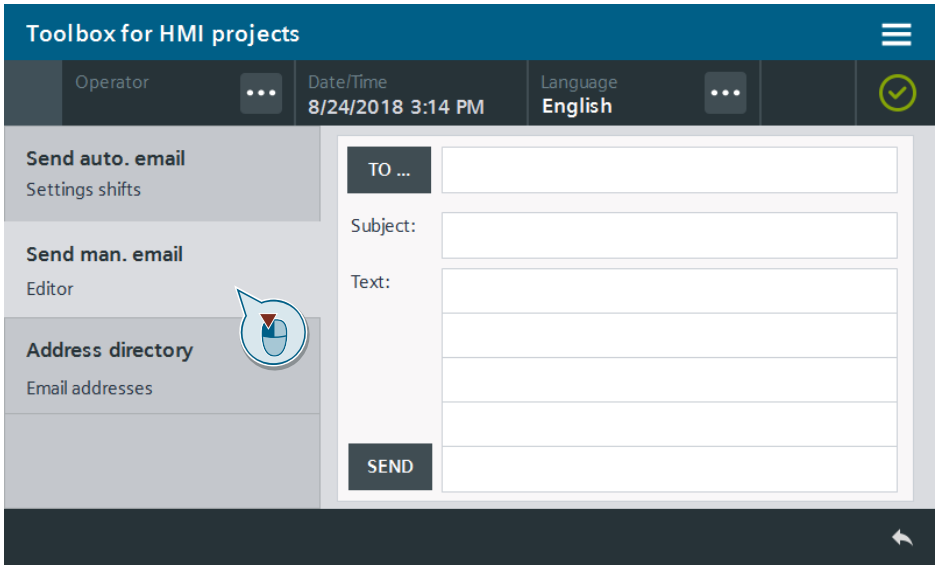


Note

You use the Save button (1) to save the settings of the individual shifts in the "LHmiData_ShiftAddressesTimes.txt" file to your operator panel. You use the Load button (2) to import the settings saved on the operator panel.

5. Click the "Send man. email - Editor" button in the page navigation on the left.

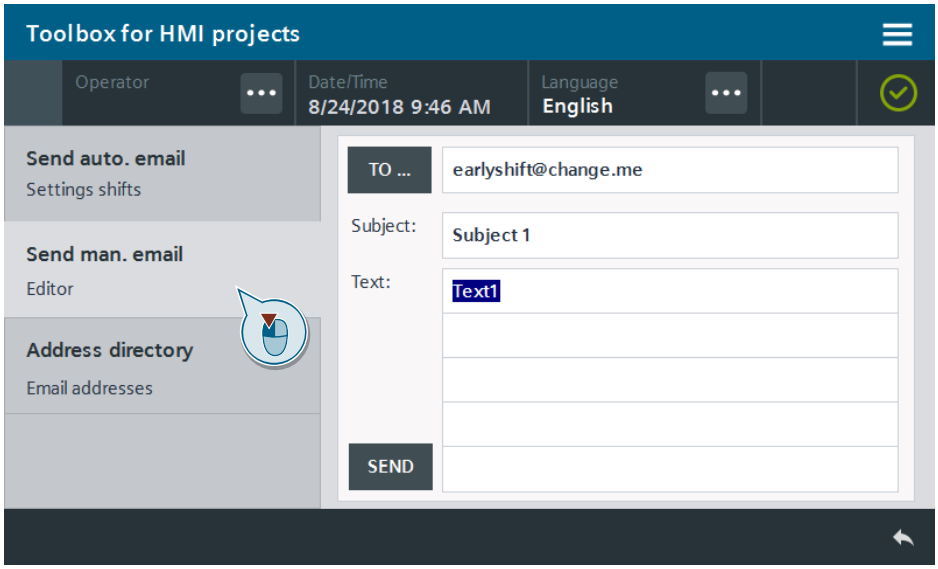
   Figure 12-15



6. Add an email recipient with the "TO…" button. The email address book opens as with "Send auto. email".

   Enter a subject and an email text.

   Figure 12-16



7. Send the email with the "SEND" button.

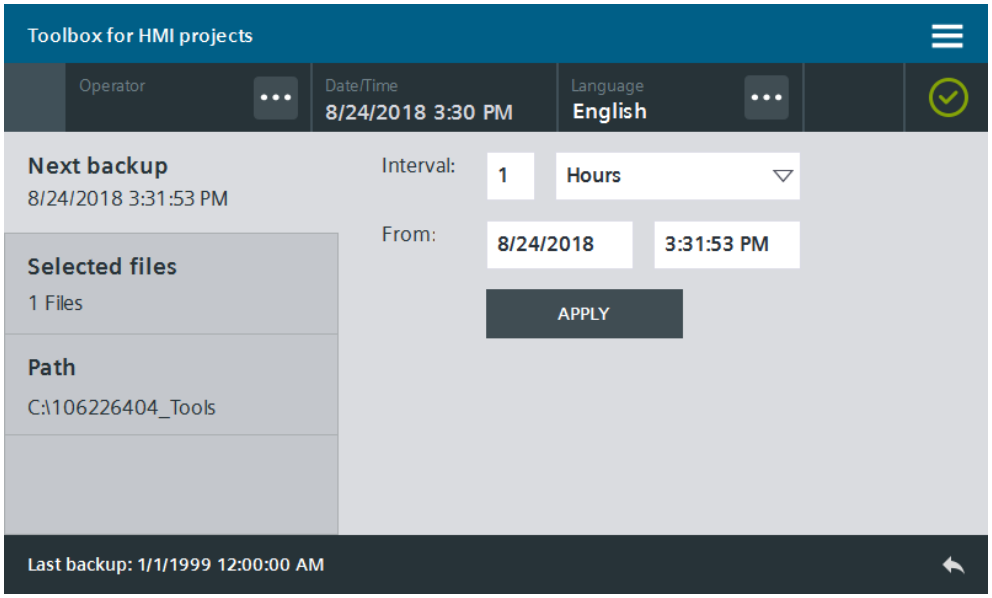
13 Data transfer – Automatic backup of files

13.1 General description

13.1.1 Description

With the aid of automatic backup, your files (e.g., archives) are backed up to any location (e.g., a USB flash drive, network folder, etc.) at configurable intervals.

Figure 13-1



13.1.2 Hardware and software components

This application example is valid for:

- SIMATIC WinCC Comfort / Advanced V15.1
- SIMATIC Comfort Panels, Comfort PRO Panels, Outdoor Panels, Mobile Panels 2nd Generation
- SIMATIC WinCC RT Advanced V15.1

13.1.3 VBS scripts used

This section explains the functions of the scripts used in the tool.

LHmiData_vbsFcCalculateNextExecute

The "LHmiData_vbsFcCalculateNextExecute" script calculates the time for the next automatic backup, based on the set time interval.

LHmiData_vbsFcCopyFiles

The "LHmiData_vbsFcCopyFiles" script copies the files selected together with date and time stamp to the file path selected.

LHmiData_vbsFcFileSelectCopyFiles

The "LHmiData_vbsFcFileSelectCopyFiles" script writes the paths of the files to the copied into the associated HMI tags.

LHmiData_vbsFcInitializeTime

The "LHmiData_vbsFcInitializeTime" script reads the current time and writes it as default value for the backup time.

LHmiData_vbsFcPreviousFolder

The "LHmiData_vbsFcPreviousFolder" script opens the higher-level folder of the currently selected folder and shows it as a table.

LHmiData_vbsFcReadFilesOfFolder

The "LHmiData_vbsFcReadFilesOfFolder " script reads the files from the specified path and shows them as a table.

LHmiData_vbsFcSearch

The "LHmiData_vbsFcSearch" script searches for the specified file/folder in the current path.

LHmiData_vbsFcShowFile

The "LHmiData_vbsFcShowFile" script opens the selected folder/file.

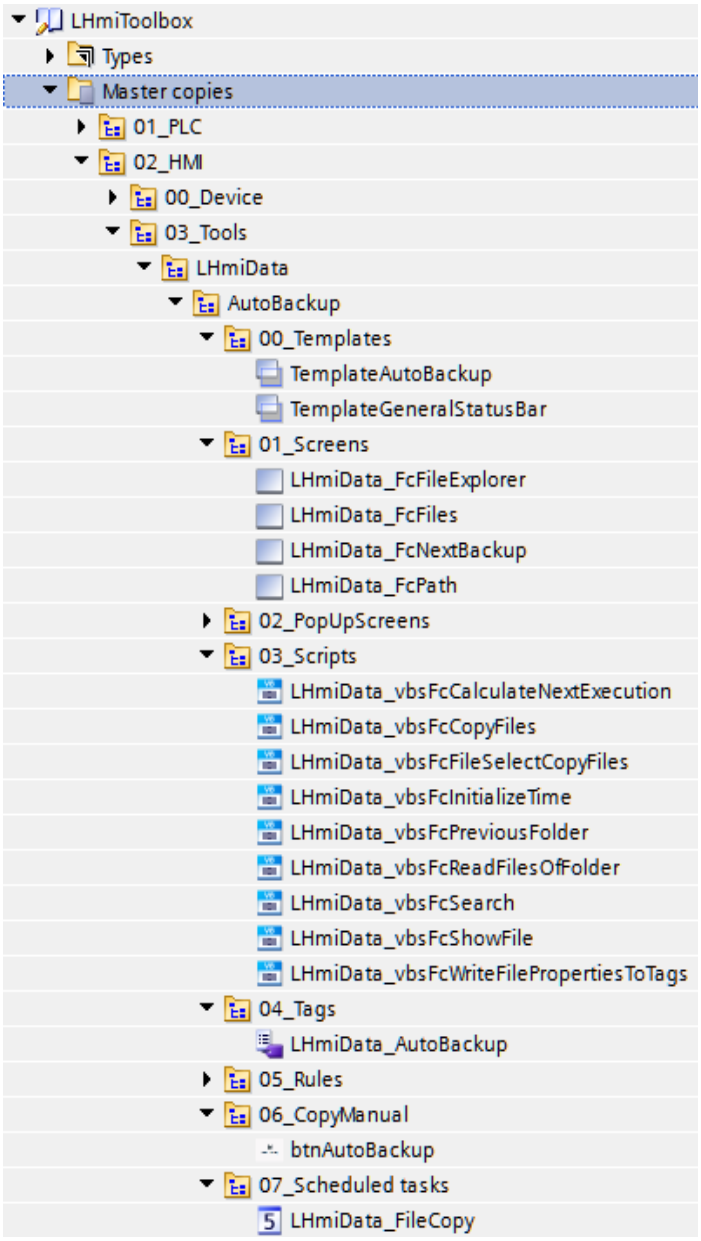
LHmiData_vbsFcWriteFilePropertiesToTags

The "LHmiData_vbsFcWriteFilePropertiesToTags" script writes the properties of the selected folder/file to the associated HMI tags.

13.2 Integration into the user project

1. Open your WinCC configuration and the library with the tools (Section 2.3).
2. Open the folder "Master copies > 02_HMI > 03_Tools > LHmiData > AutoBackup" of the library.
3. **Drag the elements (Template, Screens, Scripts, Tag table, Task) to the corresponding folder of the operator panel.**

Figure 13-2



Note

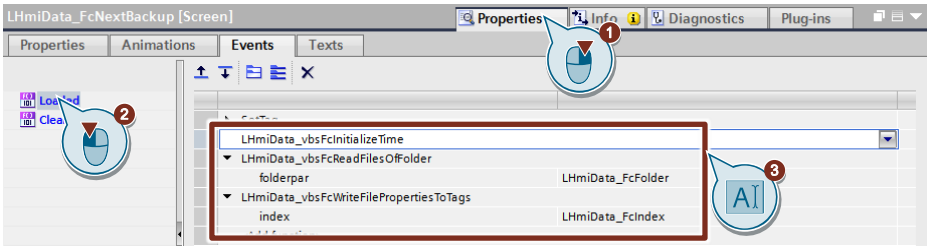
Depending on the size of the HMI operator panel, it may be necessary to adapt the screens.

4. Drag the "btnAutoBackup" button from the library to your screen. You open the tool with this button.

5. Open the "LHmiData_FcNextBackup" screen. Add the following scripts for the "Loaded" event of the screen:
   - LHmiData_vbsInitializeTime,
   - LHmiData_vbsFcReadFilesOfFolder, folderpar: LHmiData_FcFolder (HMI tag)
   - LHmiData_vbsFcWriteFilePropertiesToTags
     index: LHmiData_FcIndex (HMI tag)
     (Alternatively, you can enter your own path that starts the File Explorer.)

   You can also connect the scripts to the "Loaded" event of your start screen.

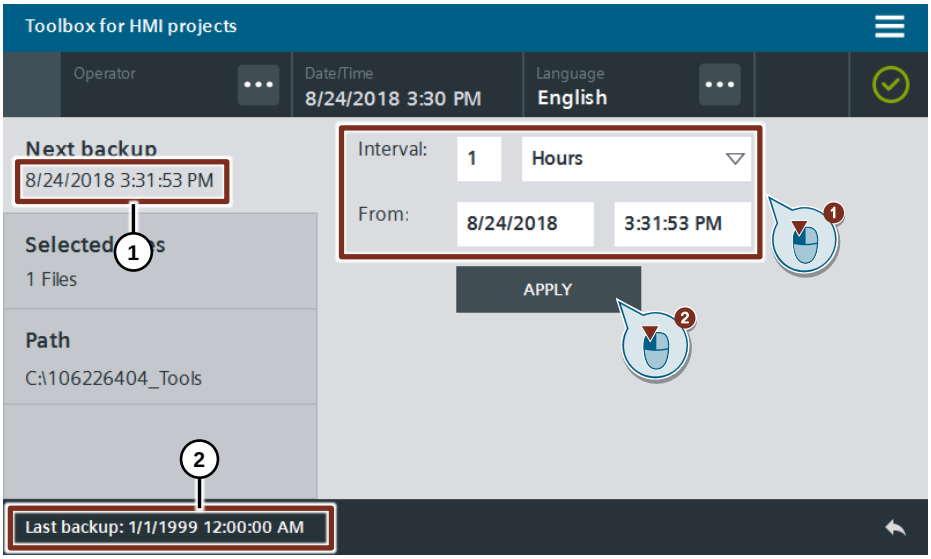
   Figure 13-3



13.3 Operation

1. Download the visualization on your operator panel or simulate it.
2. Open the Tools overview and click on the "Auto. Backup" button.
3. Enter the interval and the start time for the automatic backup.
   Confirm the entry with the "APPLY" button.

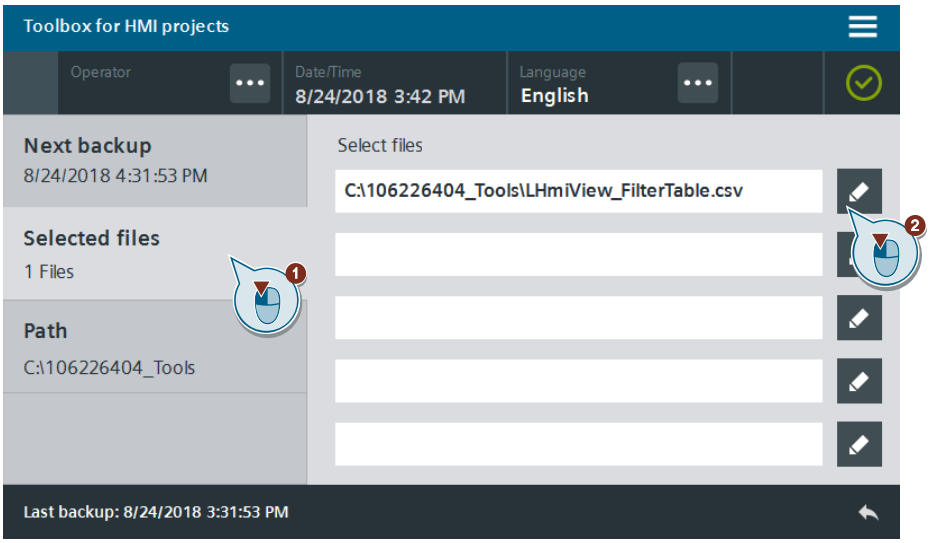
Figure 13-4



The date and time of the next backup is displayed in the "Next backup" (1) button. In the status bar (2) you can see the date and time of the last backup.

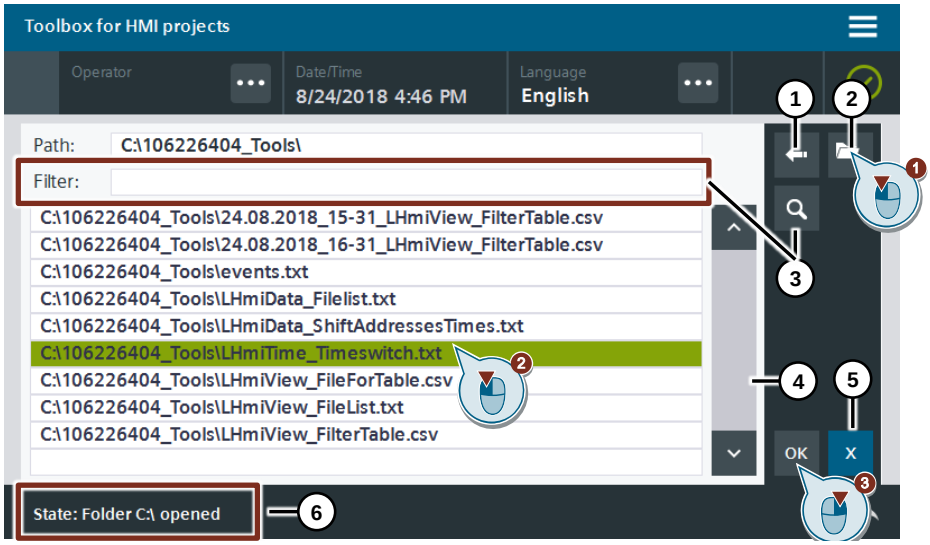
Click the "Selected Files" button in the page navigation on the left. Open the File Explorer with the Edit button. The File Explorer opens.

Figure 13-5



4. Select a file of your choice and confirm the selection with "OK".

Figure 13-6



Note

You use the Back button (1) to move up one folder level and the Folder button (2) to move down one folder level.

You use the Find button (3) to filter for the filter string of the I/O field. Only entries that contain this text segment are still displayed in the table.

The display area of the File Explorer is limited. Use the scroll bar (4) to view more entries.

Press the "x" (5) button and close the File Explorer without applying a file.

The status of the File Explorer is shown in the status bar (6).

14 Mathematical functions – Calculator

14.1 General description

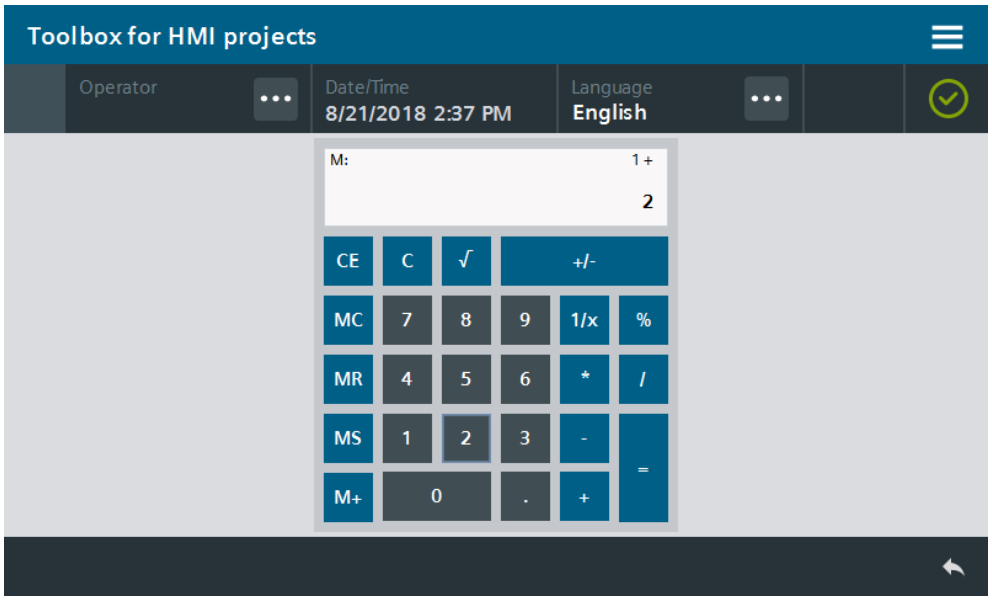
The calculator allows you to make small calculations of individual process variables. It provides simple, mathematical arithmetic operations (such as "+" and "-", for example).

The arithmetic operations are made by a VBS script within the faceplate.

The calculator is independent from the controller and mapped by a faceplate. The operator panel is realized as an HMI faceplate and offers you the option to individually customize the labeling of the buttons. This makes it possible to flexibly use and call the calculator.

For further processing of the value, use the "LHmiTime_calculation" tag of the "LReal" data type.

Figure 14-1



14.1.1 Hardware and software components

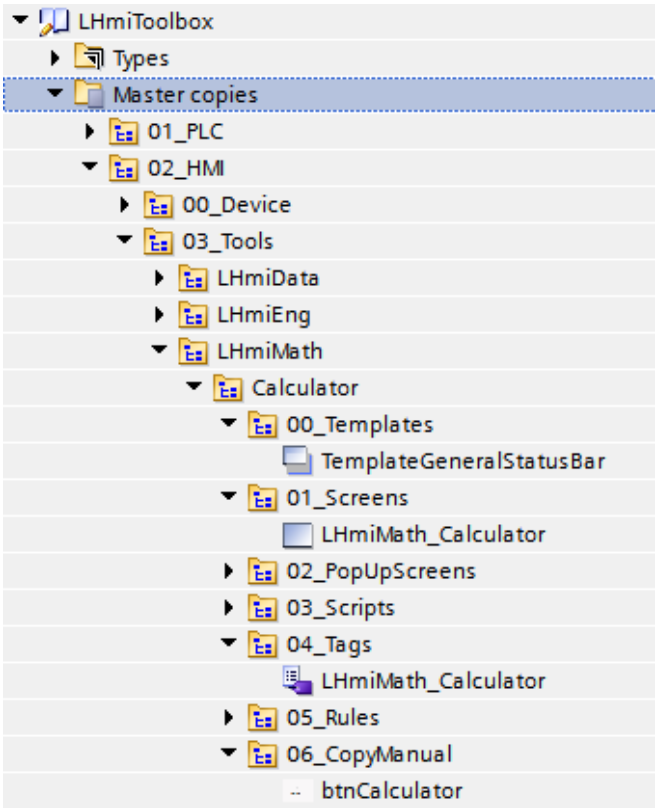
This application example is valid for:

- SIMATIC WinCC Comfort / Advanced V15.1
- SIMATIC Comfort Panels, Comfort PRO Panels, Outdoor Panels, Mobile Panels 2nd Generation
- SIMATIC WinCC RT Advanced V15.1

14.2 Integration into the user project

1. Open your WinCC configuration and the library with the tools (Section 2.3).
2. Open the folder "Master copies > 02_HMI > 03_Tools > LHmiMath> Calculator" of the library.
3. Drag the elements (Template, Screen, Tag table) to the corresponding folder of the operator panel.

Figure 14-2



Note on figure

Depending on the size of the HMI operator panel, it may be necessary to adapt the screens.
If your HMI connection to the PLC is not called "HMI_Connection_1", update your HMI connection in the tag table.

You must also synchronize the HMI tags again with the PLC tags.

Note on language

Check the current setting for the decimal separator in "Control Panel > Region and Language > Formats > Additional settings > Decimal symbol". Depending on this setting, you use different faceplates in the screen.

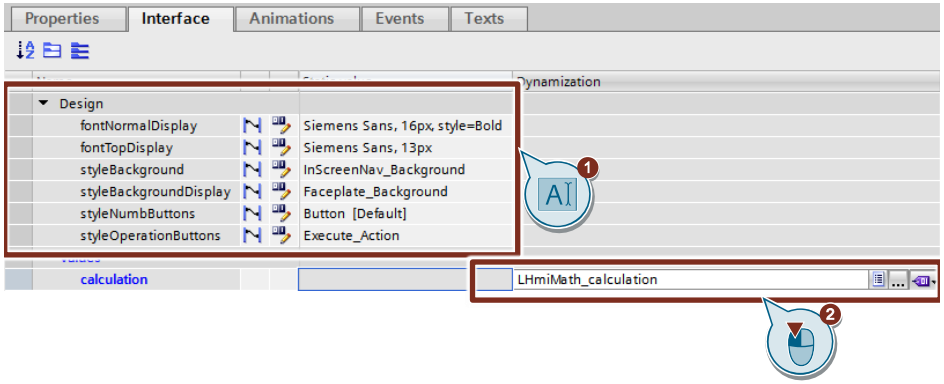
Decimal separator ",": "LHmiMath_fpCalculatorDE"

Decimal separator ".": "LHmiMath_fpCalculatorEN"

4. Drag the "btnCalculator" button from the library to your screen. You open the tool with this button.
5. Open the "LHmiMath_Calculator" screen.
6. Select the faceplate for the calculator and open the block interface with "Properties > Interface".

7. Specify the design parameters (background color, text size, etc.) in the "Design" category.
   Connect the tag "LHmiMath_calculation" for the result to the "calculation" property of the "Values" category.

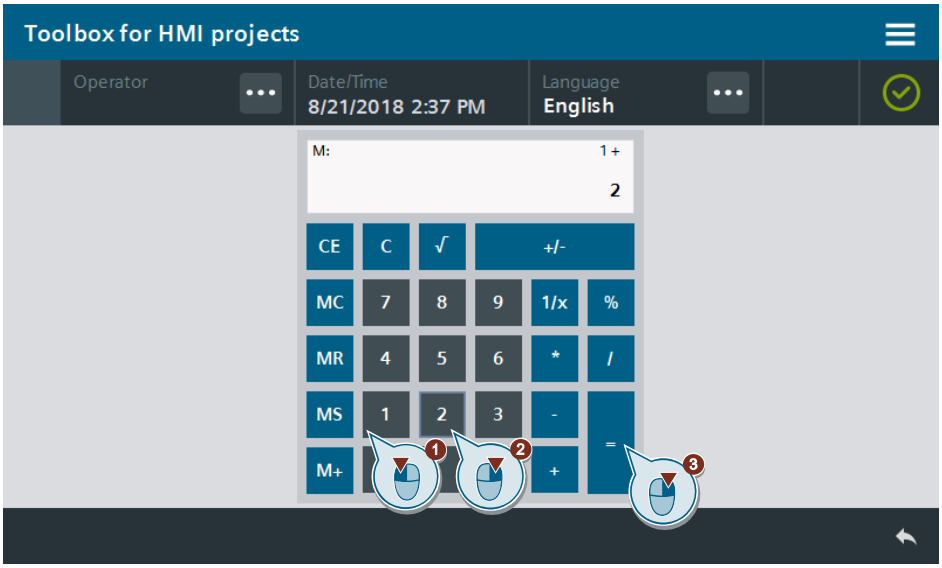
   Figure 14-3



14.3 Operation

1. Open the visualization on your operator panel or simulate it.
2. Open the Tools overview and click on the "Calculator" button.
3. Operate the calculator as you would any standard calculator.
   Enter an arithmetic operation of your choice and have the result displayed in the display with the "=" button.

   Figure 14-4



15 Mathematical functions – Unit converter

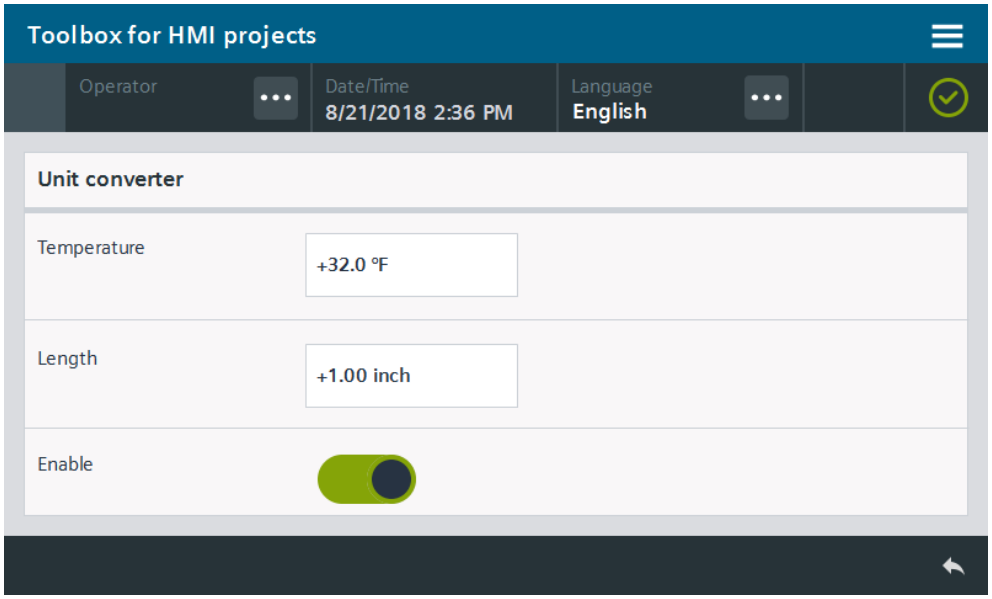
15.1 General description

The unit converter is used to quickly and easily switch between different unit systems when displaying process data. While the data can be displayed and entered in different systems, the user program in the CPU will not be affected by the switchover between the unit systems. Instead, all HMI data is to be automatically converted to the CPU's system of units.

The example project contains two faceplates for unit conversion between imperial and SI system:

- **Temperature**: °Celsius (°C) ⇔ °Fahrenheit (°F)
- **Length**: Millimeters (mm) ⇔ inches (in)

Figure 15-1



15.1.1 Hardware and software components

This application example is valid for:

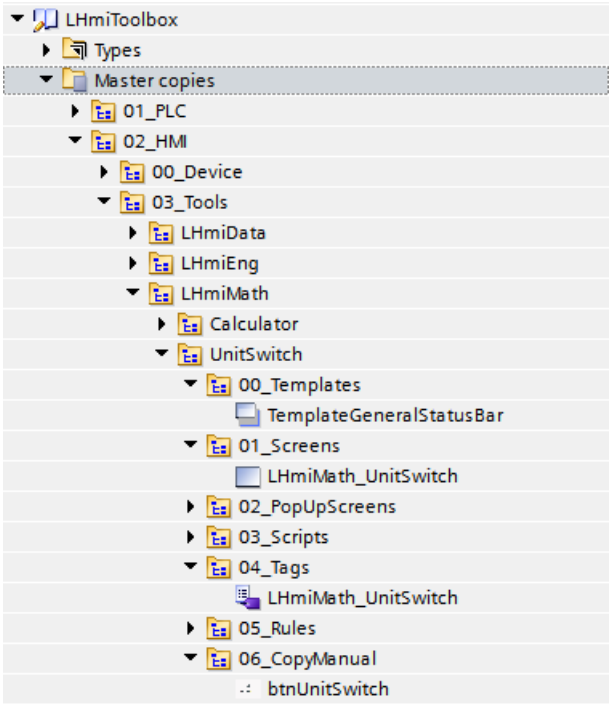
- SIMATIC WinCC Comfort / Advanced V15.1
- SIMATIC Comfort Panels, Comfort PRO Panels, Outdoor Panels, Mobile Panels 2nd Generation
- SIMATIC WinCC RT Advanced V15.1

15.2 Integration into the user project

15.2.1 Using the unit converter

1. Open your WinCC configuration and the library with the tools (Section 2.3).
2. Open the folder "Master copies > 02_HMI > 03_Tools > LHmiMath> UnitSwitch" of the library.
3. Drag the elements (Template, Screen, Tag table) to the corresponding folder of the operator panel.

Figure 15-2



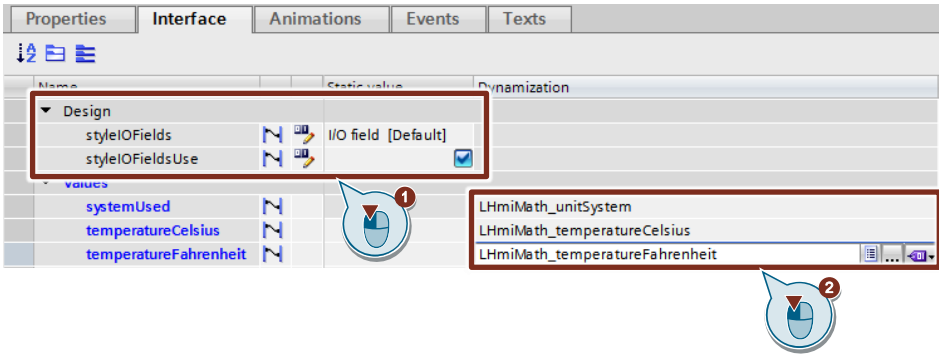
Note on figure

Depending on the size of the HMI operator panel, it may be necessary to adapt the screens.
If your HMI connection to the PLC is not called "HMI_Connection_1", update your HMI connection in the tag table.

You must also synchronize the HMI tags again with the PLC tags.

4. Drag the "btnUnitSwitch" button from the library to your screen. You open the tool with this button.
5. Open the "LHmiMath_UnitSwitch" screen.
6. Select the faceplate for the "Temperature" unit converter and open the block interface with "Properties > Interface".
7. Specify the style for the I/O fields of the faceplate with the "Design" category and activate the faceplate using the option button.

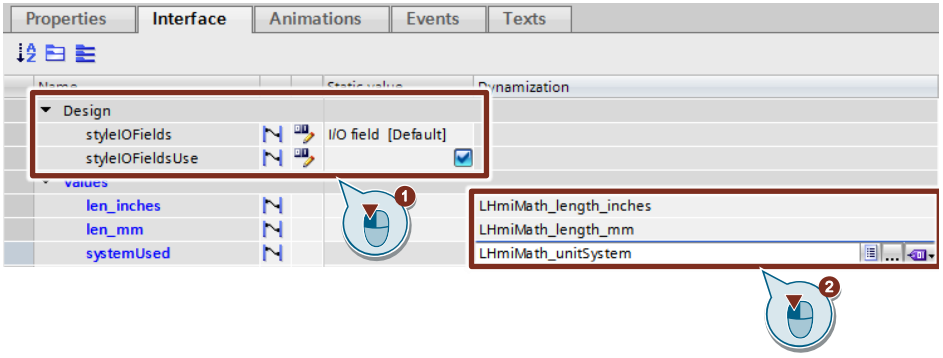
8. Connect the associated tags from the "LHmiMath_UnitSwitch" tag table to the properties of the "Values" category.



Note
The use of two HMI tags for the temperature is for demonstration purposes only. In practice, you would use only one tag in the process.

9. Repeat steps 6-7 for the faceplate of the "Length" unit converter.

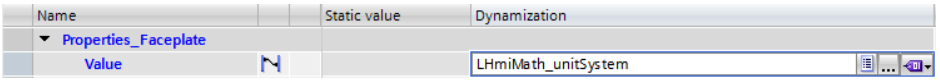
Figure 15-3



10. Select the faceplate for the switch and open the block interface with "Properties > Interface".

    Connect the "LHmiMath_UnitSystem" tag to the "Value" property of the "Properties_Faceplate" category.

Figure 15-4



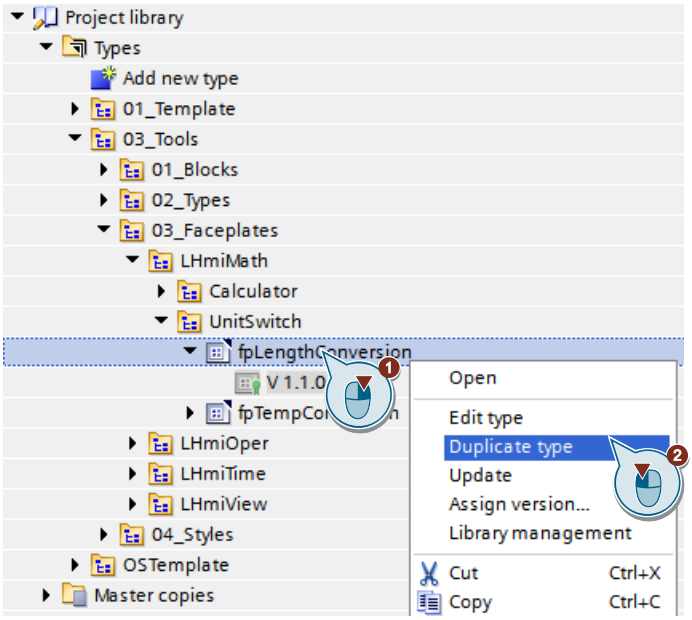
You control the conversion in the faceplates with the tag value.

- 0: Metric unit system
- 1: Imperial unit system

15.2.2 Configuring additional unit converters

1. Open the "Project library" pane and duplicate the "Length_Conversion" faceplate.

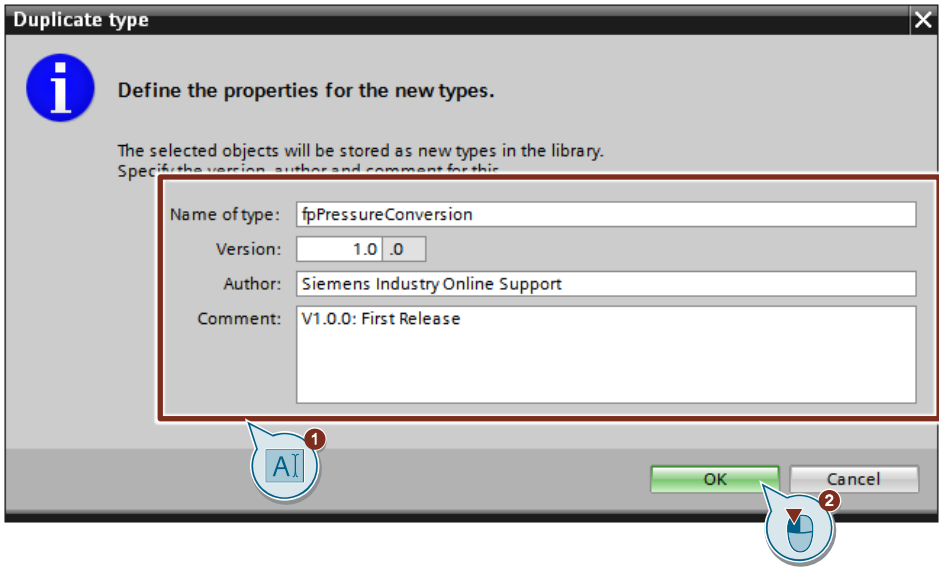
   Figure 15-5



2. Name the faceplate (for example, "Pressure_Conversion").

   If necessary, adjust the version and enter a comment for the version.

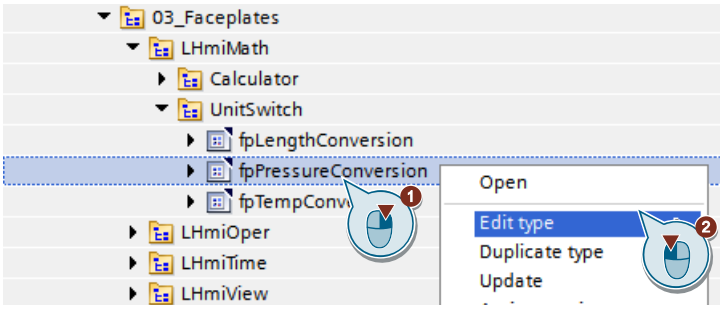
   Figure 15-6



   The type is stored in the project library.

3. Open the faceplate in edit mode.

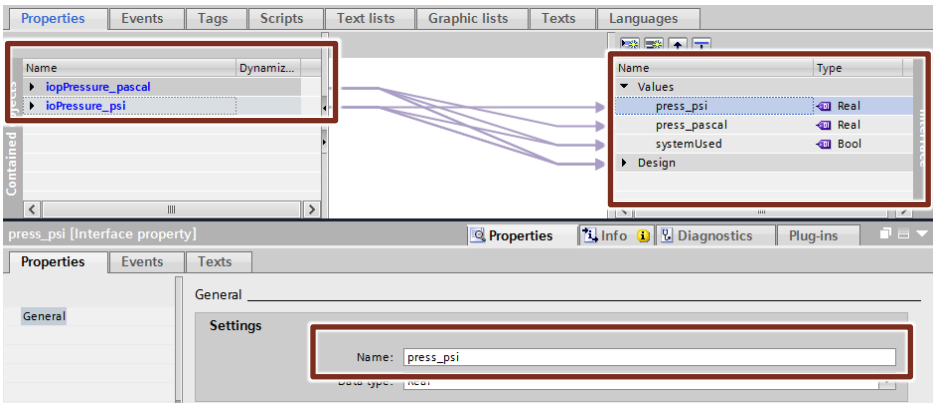
   Figure 15-7



4. Select the "Properties" tab in the configuration area and open the view of the interface parameters in the right screen area with the black arrow.

   In the Inspector window under "Properties > General", adjust the names of the properties of the "Values" category as well as the names of the two I/O fields.

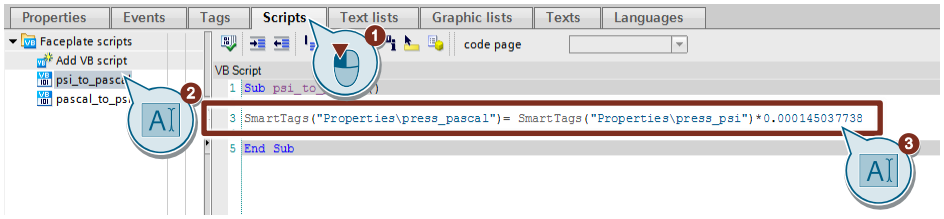
   Figure 15-8



5. Select the "Scripts" tab in the configuration area.

   Select a script and press "F2". Rename the script.
   Enter the conversion formulas for the unit systems.

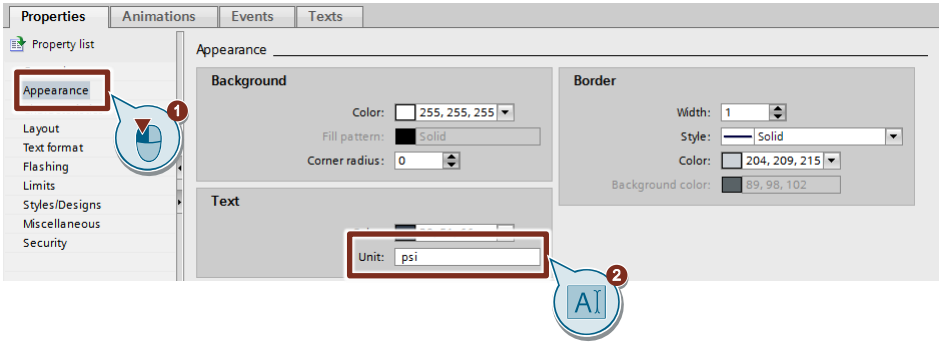
   Figure 15-9



   Repeat this step for the other script.

6. Select an I/O field. Specify the unit of the value under "Properties > Appearance > Unit".

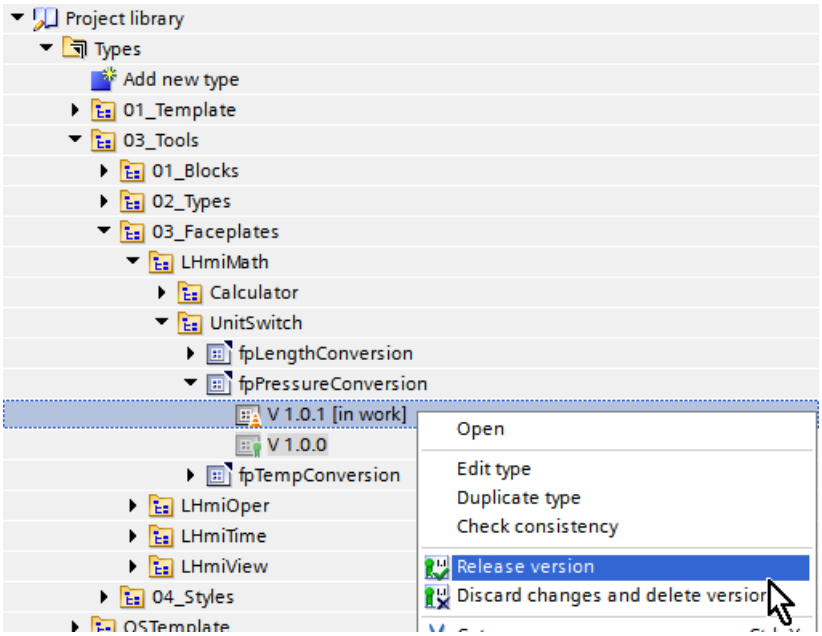
   Figure 15-10



   Repeat this step for the second I/O field.

7. Release the faceplate.

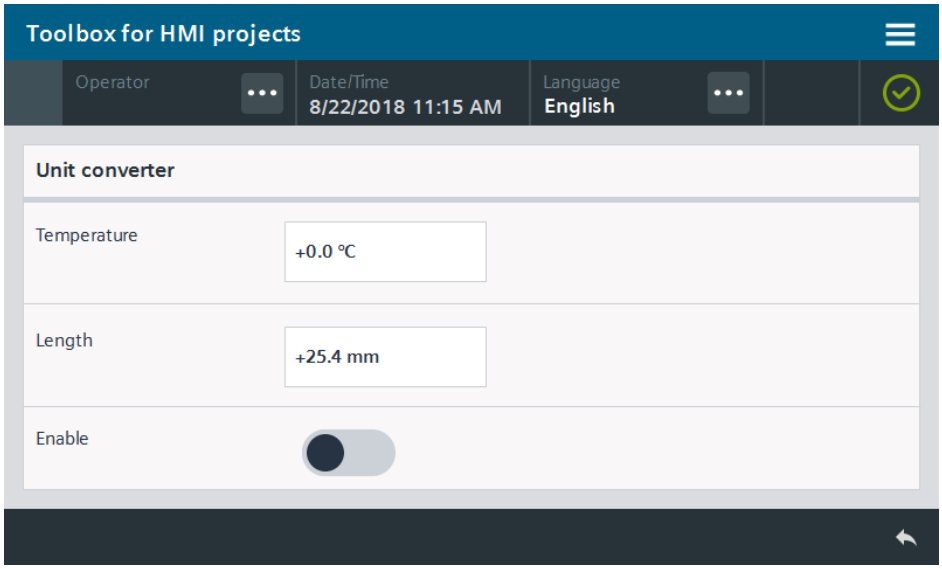
   Figure 15-11



15.3 Operation

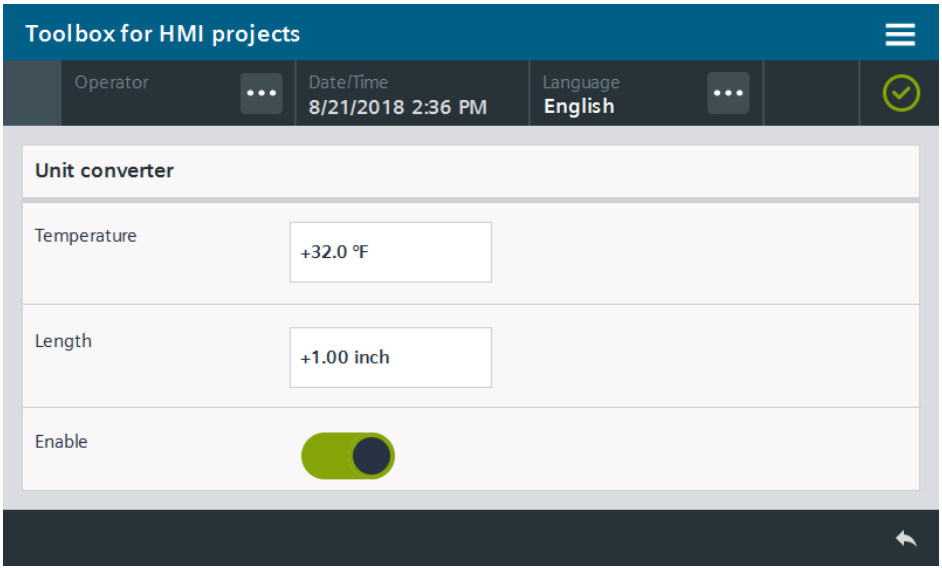
1. Open the visualization on your operator panel or simulate it.
2. Open the Tools overview and click on the "Unit converter" button.
3. Select a value of your choice for temperature and length.

   Figure 15-12



4. Confirm the "Enable" switch.
   The I/O fields show the converted temperature and length values.

   Figure 15-13



16 Simplified operation – On-screen keyboards

16.1 General description

The standard on-screen keyboard in control panels cannot be resized and is only available in a single keyboard layout (English). You can create proprietary keyboards which fit your space and language requirements using faceplates.

The on-screen keyboard tool provides five faceplates with different keyboards in the language versions "German (Germany)" and "English (USA)".

Figure 16-1: QWERTY keyboard

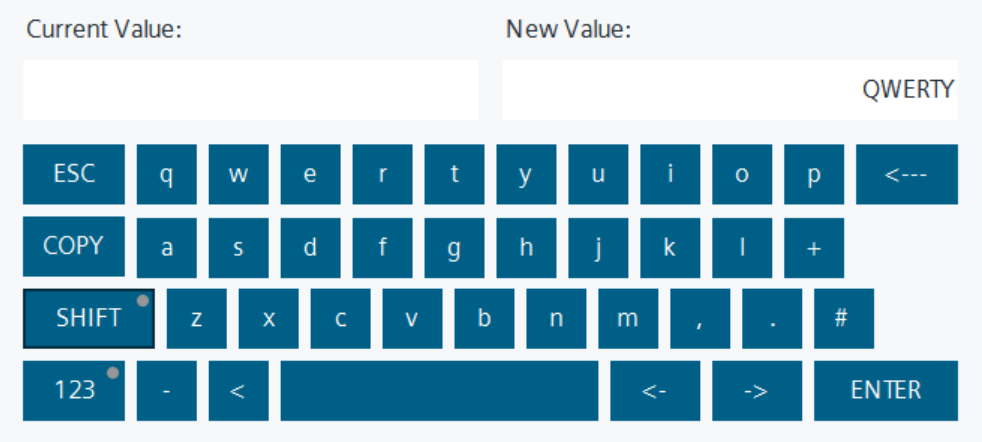


Figure 16-2: Numeric keypad

Figure 16-3: Cyrillic keypad

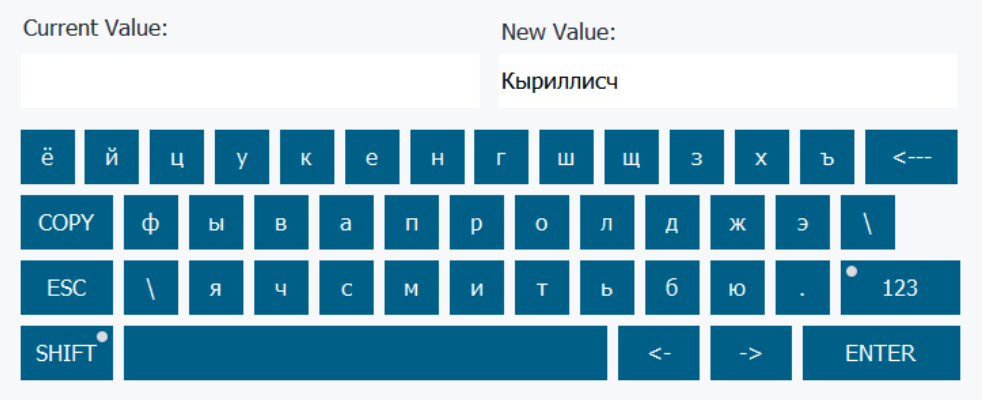


Figure 16-4: AZERTY keyboard

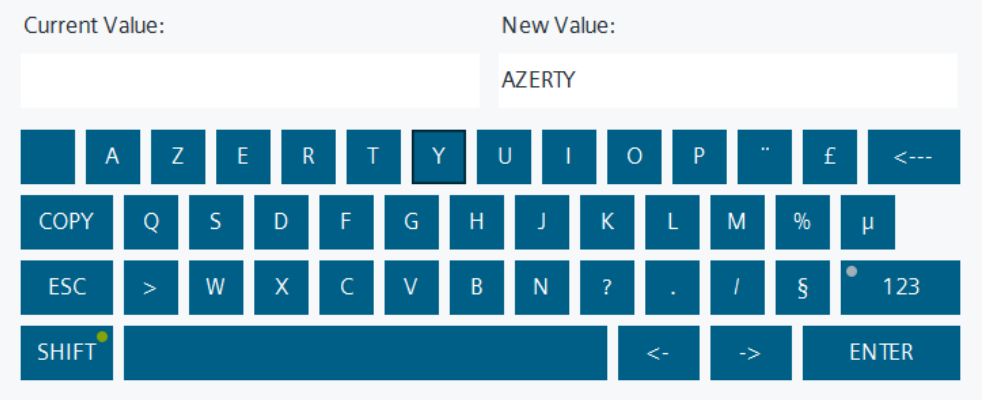
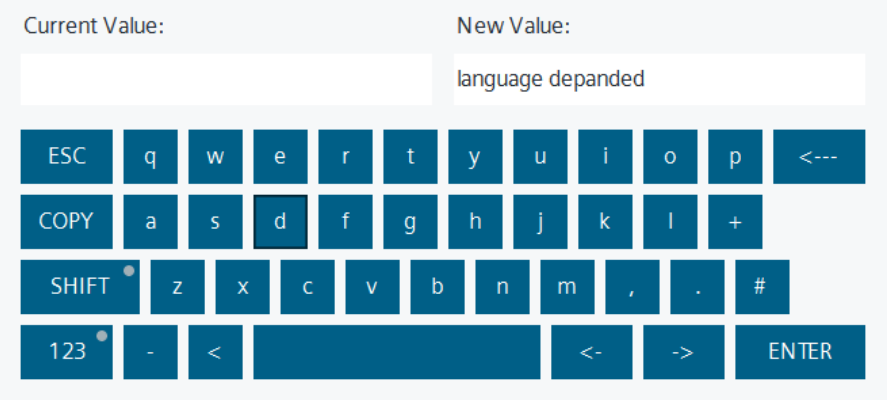


Figure 16-5: Language-dependent keyboard (German (Germany), English (USA))



16.1.1 Hardware and software components

This application example is valid for:

- SIMATIC WinCC Comfort / Advanced V15.1
- SIMATIC Comfort Panels, Comfort PRO Panels, Outdoor Panels, Mobile Panels 2nd Generation
- SIMATIC WinCC RT Advanced V15.1

16.1.2 VBS scripts used

This section explains the functions of the scripts used in the tool.

LHmiOper_vbsOpenAZERTYKeyboard

The "LHmiOper_vbsOpenAZERTYKeyboard" script opens the "LHmiOper_popupAZERTYKeyboard" pop-up screen.

LHmiOper_vbsCloseAZERTYKeyboard

The "LHmiOper_vbsCloseAZERTYKeyboard" script closes the "LHmiOper_popupAZERTYKeyboard" pop-up screen and writes the entered string into the associated HMI tag "valueAZERTYKeyboard".

LHmiOper_vbsOpenCyrKeyboard

The "LHmiOper_vbsOpenCyrKeyboard" script opens the "LHmiOper_popupCyrKeyboard" pop-up screen.

LHmiOper_vbsCloseCyrKeyboard

The "LHmiOper_vbsCloseCyrKeyboard" script closes the "LHmiOper_popupCyrKeyboard" pop-up screen and writes the entered string into the associated HMI tag "valueCyrilicKeyboard".

LHmiOper_vbsOpenLangKeyboard

The "LHmiOper_vbsOpenLangKeyboard" script opens the "LHmiOper_popupLangKeyboard" pop-up screen.

LHmiOper_vbsCloseLangKeyboard

The "LHmiOper_vbsCloseLangKeyboardClose" script closes the "LHmiOper_popupLangKeyboard" pop-up screen and writes the entered string into the associated HMI tag "valueLangKeyboard".

LHmiOper_vbsOpenNumKeyboard

The "LHmiOper_vbsOpenNumKeyboard" script opens the "LHmiOper_popupNumKeyboard" pop-up screen.

LHmiOper_vbsCloseNumKeyboard

The "LHmiOper_vbsCloseNumKeyboard" script closes the "LHmiOper_popupNumKeyboard" pop-up screen and writes the entered string into the associated HMI tag "valueNumericKeyboard".

LHmiOper_vbsOpenQWERTYKeyboard

The "LHmiOper_vbsOpenQWERTYKeyboard" script opens the "LHmiOper_popupQWERTYKeyboard" pop-up screen.

LHmiOper_vbsCloseQWERTYKeyboard

The "LHmiOper_vbsCloseQWERTYKeyboard" script closes the "LHmiOper_popupQWERTYKeyboard" pop-up screen and writes the entered string into the associated HMI tag "valueQWERTYKeyboard".

LHmiOper_vbsActivateStandardKeyboard

The "LHmiOper_vbsActivateStandardKeyboard" script opens the standard keyboard.

LHmiOper_vbsDeactivateStandardKeyboard

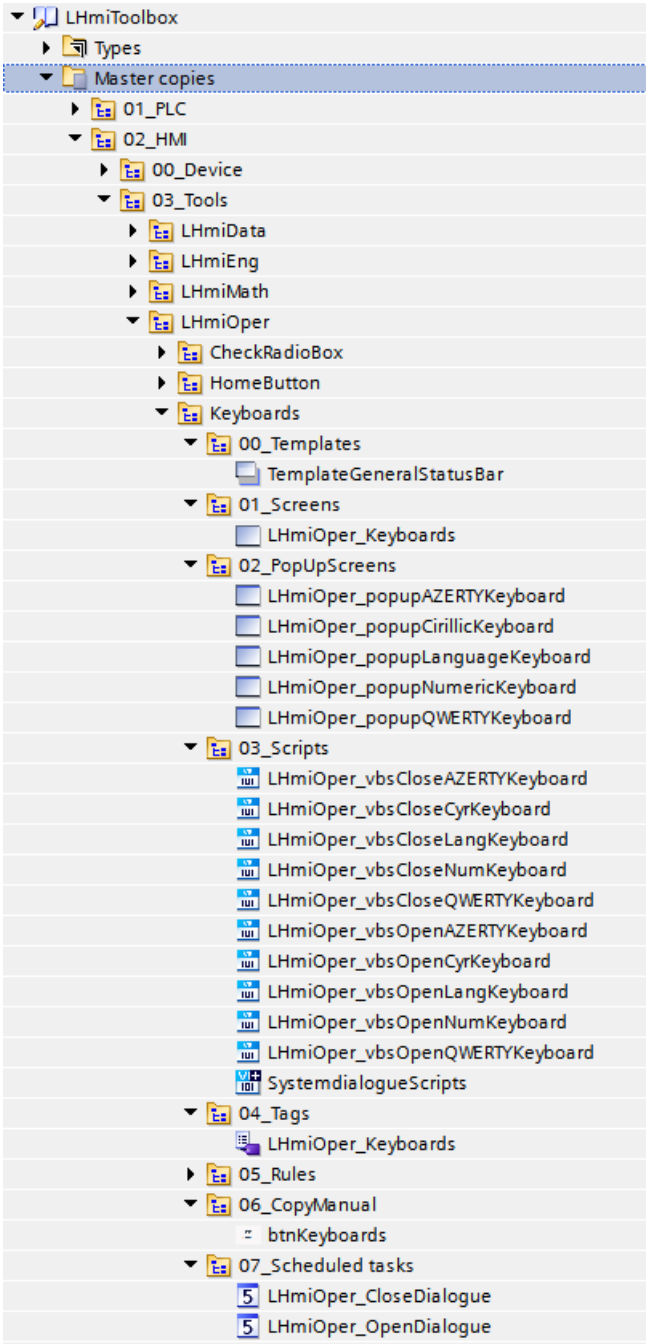
The "LHmiOper_vbsDeactivateStandardKeyboard" script closes the standard keyboard.

16.2 Integration into the user project

16.2.1 Integrating on-screen keyboards into your configuration

1. Open your WinCC configuration and the library with the tools (Section 2.3).
2. Open the folder "Master copies > 02_HMI > 03_Tools > LHmiOper > Keyboards" of the library.
3. Drag the elements (Template, Screens, PopUp Screens, Scripts, Tag table) to the corresponding folder of the operator panel.

Figure 16-6

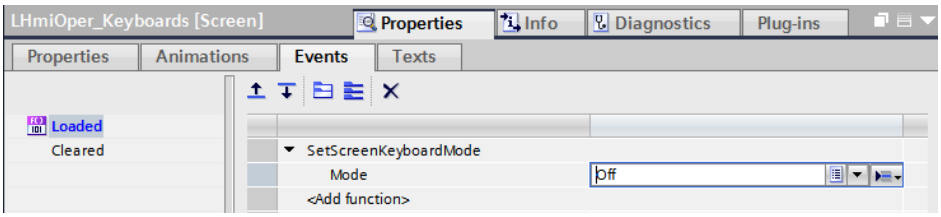


Note

Depending on the size of the HMI operator panel, it may be necessary to adapt the screens.

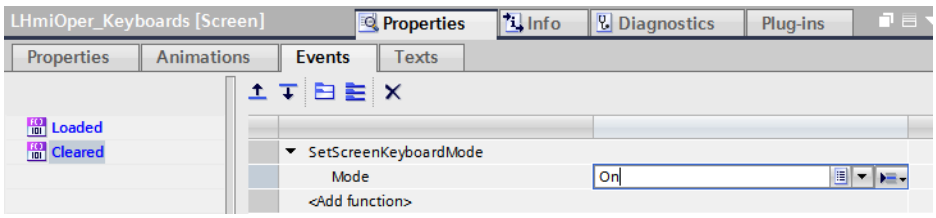
4. Drag the "btnKeyboards" button from the library to your screen. You open the tool with this button.
5. Open the "LHmiOper_Keyboards" screen.
6. Close the standard on-screen keyboard when the screen is called. To do so, call the system function "SetScreenKeyboardMode" for the "Loaded" event of the screen and set the mode to "Off".

   Figure 16-7



7. Activate the standard on-screen keyboard once again when the screen is closed. To do so, call the system function "SetScreenKeyboardMode" for the "Cleared" event of the screen and set the mode to "On".

   Figure 16-8



8. Add an I/O field and a button with "Toolbox > Elements".

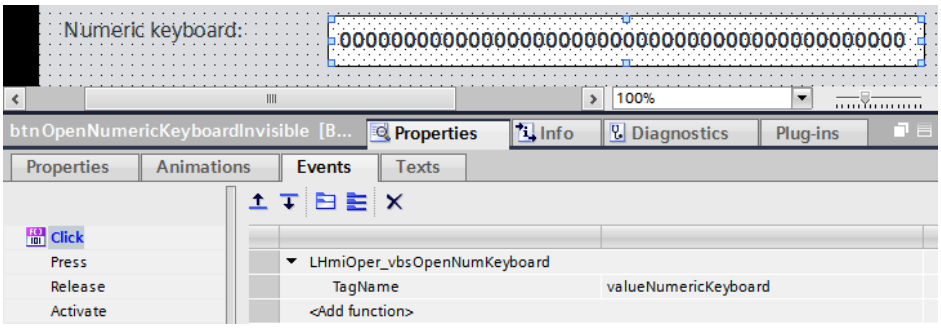
   Note

   You can configure the "Invisible" button and position it over the I/O field. This gives you the option of calling the keyboard with a click on the field.

9. Add the open script of the keyboard of your choice to the "Click" event.

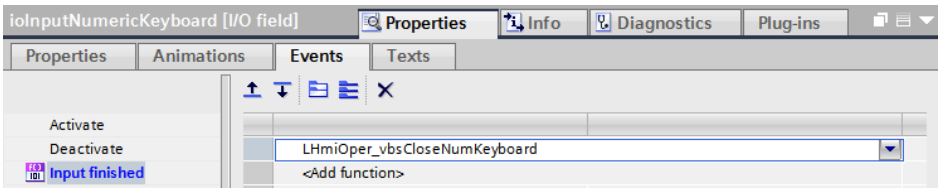
   Select "String" as data type and enter the tag name of the associated tag of the selected keyboard.

   Figure 16-9

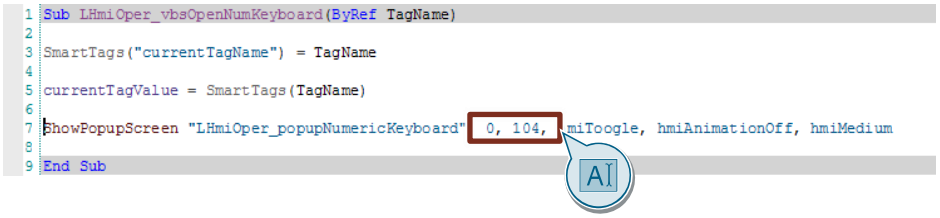


10. Add the close script of the keyboard to the "Input finished" event of the I/O field.

Figure 16-10



11. Open the Open script of the keyboard. If necessary, adjust the position at which the on-screen keyboard is opened in the script.



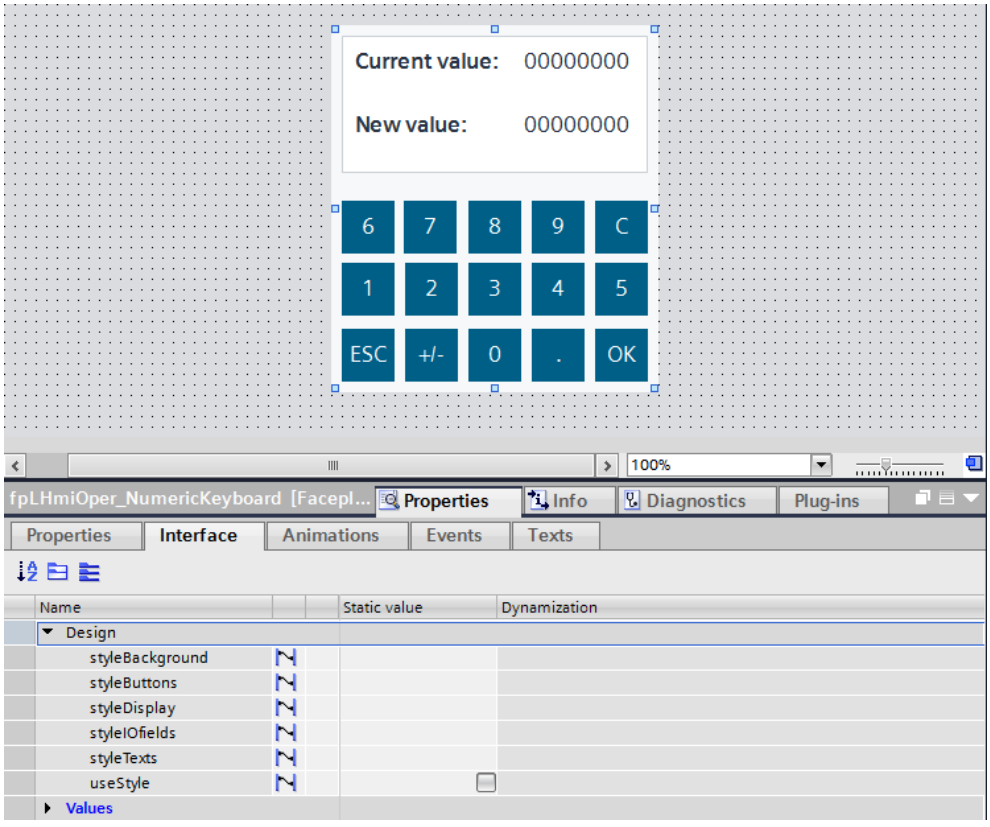
16.2.2 Notes, tips & tricks

Style settings

Each keyboard is realized as a faceplate and offers the "Design" category with different style properties at its interface.

You can connect existing style elements to these style properties. You apply the style of the connected elements with the "useStyle" property.

Figure 16-11



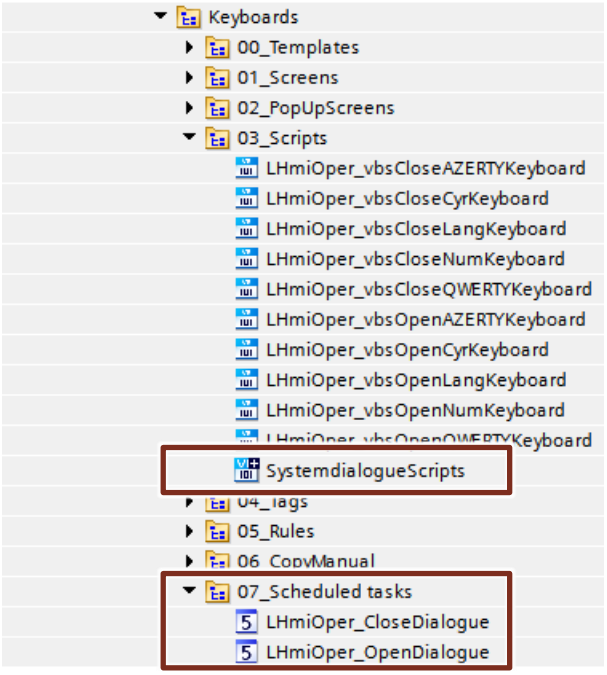
Note For the basic principles and further information on the use, processing and creation of styles, please refer to the application example "SIMATIC HMI Operator Panels - Innovative Design and Operation".

The link is available in the document list under \6\.

On-screen keyboard in dialogs

You cannot do a covered input with the customizable on-screen keyboard. Thus you must use the WinCC standard on-screen keyboard for system dialogs (e.g. Login).

1. Copy the scripts "SystemdialogueScripts" from the library into the VB scripts folder of your operator panel.



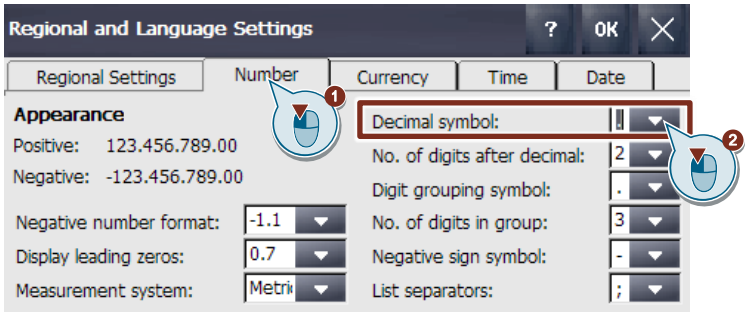
2. Copy the tasks "LHmiOper_OpenDialogue" and "LHmiOper_CloseDialogue" into the scheduler.

Decimal separator

You can define in the Panel's or PC's regional settings which sign is used as decimal separator.

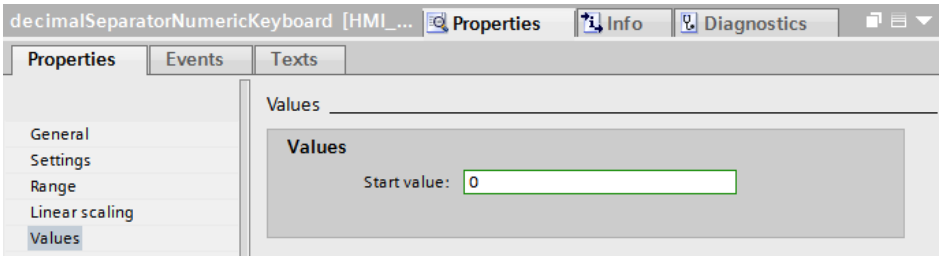
1. Open the settings for the decimal separator and change it to one of your choice.
   - On the Panel, you can find this setting in the "Control Panel" under "Regional Settings > Number > Decimal symbol".
   - On the PC, you can find this setting in the "Control Panel" under "Region and Language > Formats > Additional settings > Decimal symbol".

Figure 16-12



2. Open the tag table "LHmiOper_Keyboards".
3. Open the properties of the tag "decimalSeparatorNumericKeyboard" and specify the "Start value".
   - 0: Delimiter point (.)
   - 1: Delimiter comma (,)

Figure 16-13



Data types and fonts of screen objects

In on-screen keyboards with Cyrillic characters use a data type appropriate for Unicode (e.g. WString). In addition, the font of the buttons and I/O fields must contain a Cyrillic character set. Options are, for example:

- Tahoma
- Arial

Language-dependent keyboard

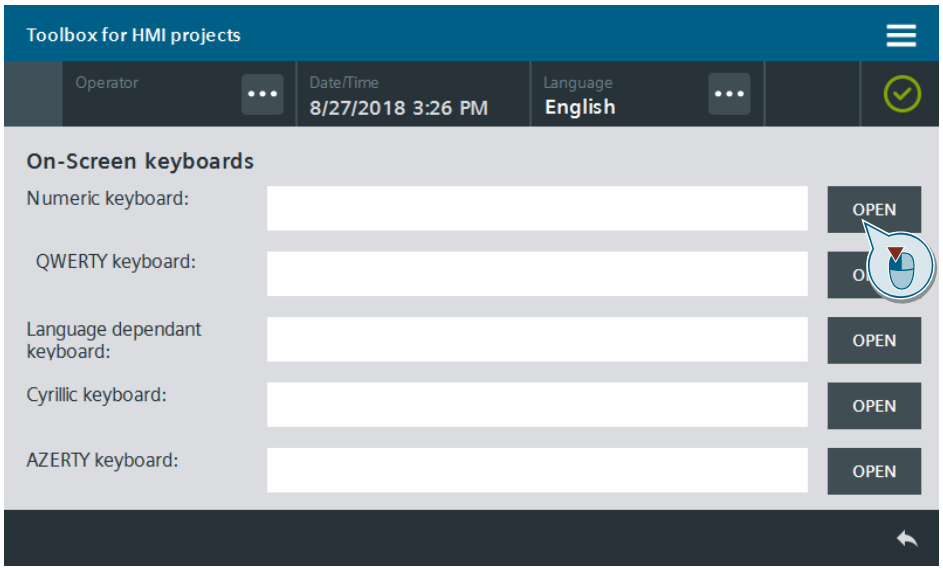
The set language is checked when the keyboard "LHmiOper_popupLanguageKeyboard" is opened.

Thus always change the language when the keyboard is closed or open the keyboard again after having changed the language.

16.3 Operation

1. Open the visualization on your operator panel or simulate it.
2. Open the Tools overview and click on the "Keyboards" button.
3. Open a keyboard of your choice by clicking on the I/O field or the "OPEN" button.

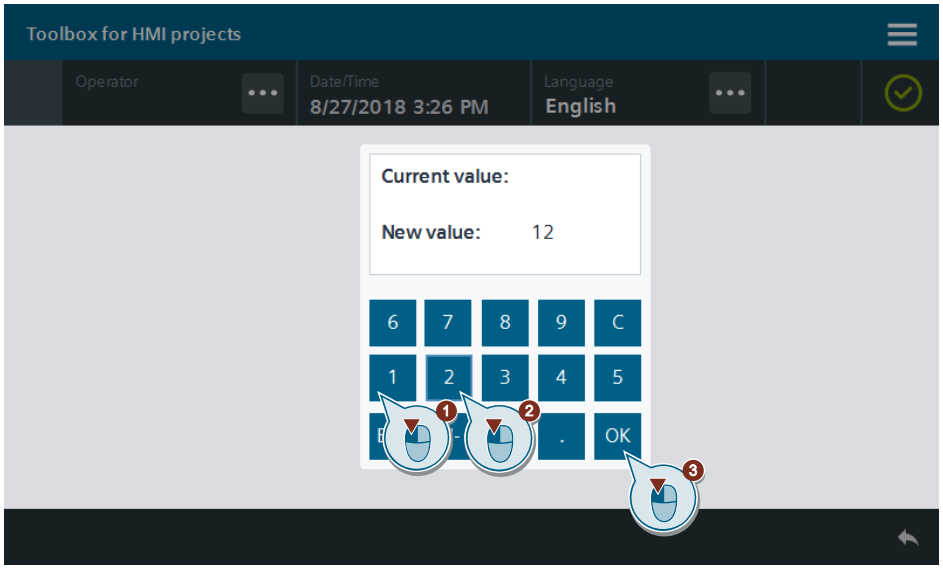
Figure 16-14



4. Enter a value of your choice and confirm the entry with "OK".

Note
The "Esc" button closes the keyboard without applying the value.

Figure 16-15



17 Simplified operation – Home button

17.1 General description

The operation of the Home button is as intuitive as you are used to it with your smartphone or tablet. The button recognizes a short or long click with the help of a function block in the controller.

The tool is configured so that the start screen opens with a short click on the button. A long click opens the second overview page of the tools.

Figure 17-1

17.1.1 Hardware and software components

This application example is valid for:

- SIMATIC STEP 7 Professional V15.1
- SIMATIC WinCC Comfort / Advanced V15.1
- SIMATIC S7-1500
- SIMATIC Comfort Panels, Comfort PRO Panels, Outdoor Panels, Mobile Panels 2nd Generation
- SIMATIC WinCC RT Advanced V15.1

17.1.2 Data types and function blocks used

This section explains the functions of the function blocks and data types used in the tool.

LHmiOper_DelayButton

The function block "LHmiOper_DelayButton" calculates the time the "Home Button" has been pressed and sets the tags "shortClick" or "longClick" as a function of length of time of clicking.

Figure 17-2: Function block "LHmiOper_DelayButton"

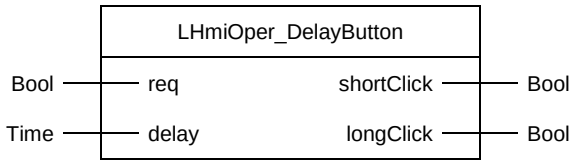


Table 17-1: LHmiOper_DelayButton parameters

Name	P type	Data type	Comment
req	IN	Bool	Trigger for FB enable
delay	IN	Time	Period of time which must elapse at least between short and long clicking
shortClick	OUT	Bool	Status for short click
longClick	OUT	Bool	Status for long click

17.1.3 VBS scripts used

This section explains the functions of the scripts used in the tool.

LHmiOper_vbsPressedLongHomeButton

The "LHmiOper_vbsPressedLongHomeButton" script is executed when the button is clicked for a longer time than the set delay time. As a result, the "Slide-in screen right" is called in the application example.

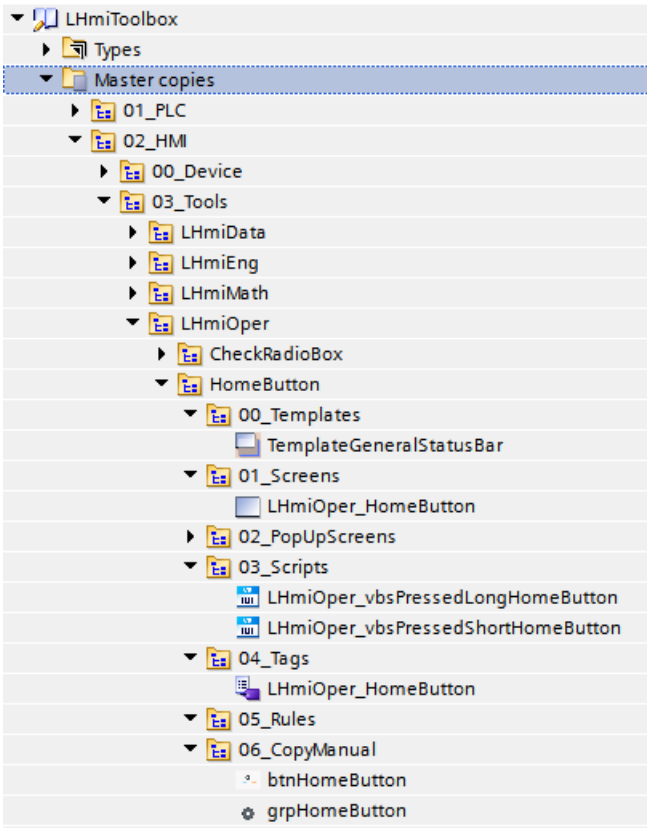
LHmiOper_vbsPressedShortHomeButton

The "LHmiOper_vbsPressedShortHomeButton" script is executed when the button is clicked for a shorter time than the set delay time. As a result, the "Tools_Overview2" screen is called in the application example.

17.2 Integration into the user project

1. Open your WinCC configuration and the library with the tools (Section 2.3).
2. Open the folder "Master copies > 02_HMI > 03_Tools > LHmiOper > HomeButton" of the library.
3. Drag the elements (Template, Screen, Scripts, Tag table) to the corresponding folder of the operator panel.

Figure 17-3



Note

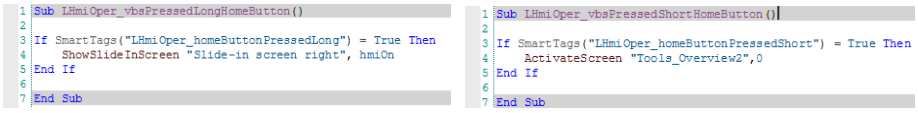
Depending on the size of the HMI operator panel, it may be necessary to adapt the screen.
If your HMI connection to the PLC is not called "HMI_Connection_1", update your HMI connection in the tag table.
You must also synchronize the HMI tags again with the PLC tags.

4. Drag the "btnHomeButton" button from the library to your screen. You open the tool with this button.
5. Open the "LHmiOper_HomeButton" screen. Drag the "grpHomeButton" screen object grouping from the library to your screen.

6. Open the "LHmiOption_vbsPressedLongHomeButton" script and change the result for a long click in the If loop to one of your choice.

   Repeat the process for the script for a short click.

   Figure 17-4



```
Sub LHmiOper_vbsPressedLongHomeButton()

If SmartTags("LHmiOper_homeButtonPressedLong") = True Then
    ShowSlideInScreen "Slide-in screen right", hmiOn
End If

End Sub
```

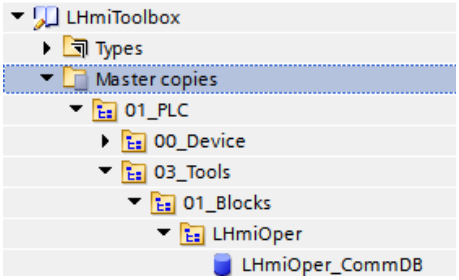
```
Sub LHmiOper_vbsPressedShortHomeButton()

If SmartTags("LHmiOper_homeButtonPressedShort") = True Then
    ActivateScreen "Tools_Overview2",0
End If

End Sub
```

7. Open the folder "Master copies > > 01_PLC > 03_Tools > 01_Blocks > LHmiOper" of the library.
8. Drag the data block "LHmiOper_CommDB" to the "Program blocks" folder of your PLC.

   Figure 17-5



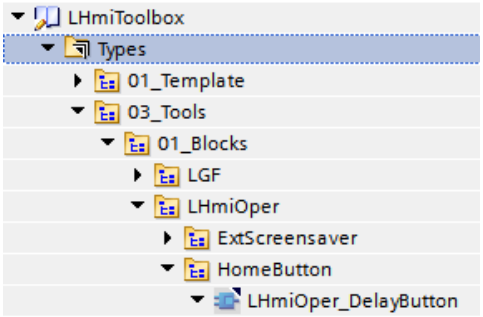
   Note
   All tags that are required for the Home button have the prefix "homeButton".

   If you have already integrated the data block in connection with another tool, you can skip this step.

9. Open the folder "Types > 03_Tools > 01_Blocks > LHmiOper > HomeButton" of the library.

10. Drag the function blocks "LHmiOper_DelayButton" to the "Program blocks" folder of your PLC.

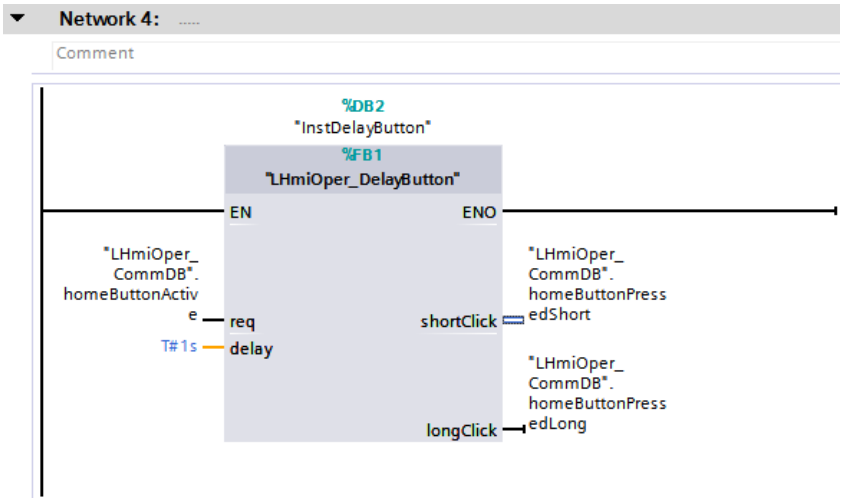
    Figure 17-6



11. Call the function block "LHmiOper_DelayButton" in your user program and interconnect the inputs and outputs with the corresponding tags of the communication DB.

    At the "delay" input, specify the time after which the Home button is to distinguish between a "long" and a "short" click.

    Figure 17-7

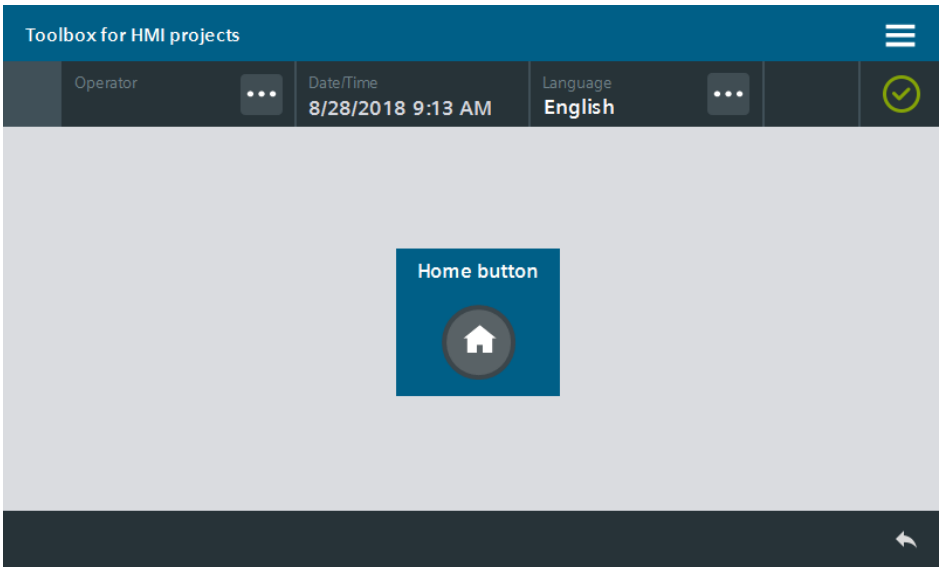


12. Download the software to your operator panel and your PLC or start the simulation.

17.3 Operation

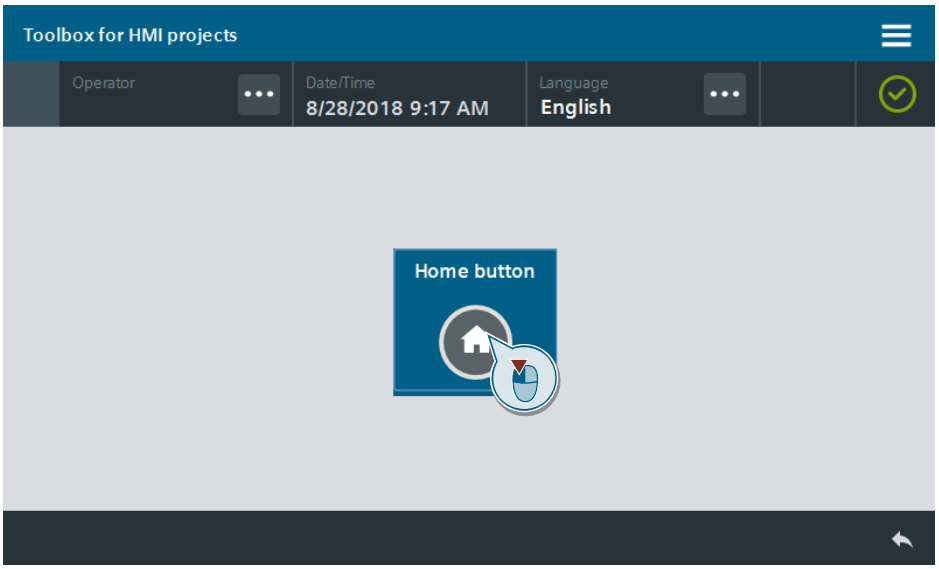
1. Open the visualization on your operator panel or simulate it.
2. Open the Tools overview and click on the "Home button" button.
3. Press the Home button briefly to open the tool overview.

   Figure 17-8



4. Repeat step 2 and press the Home button longer (> 2 s) to open the slide-in on the right.
   The edge of the button turns light when the Home button is clicked for a long time. The slide-in right opens.

   Figure 17-9



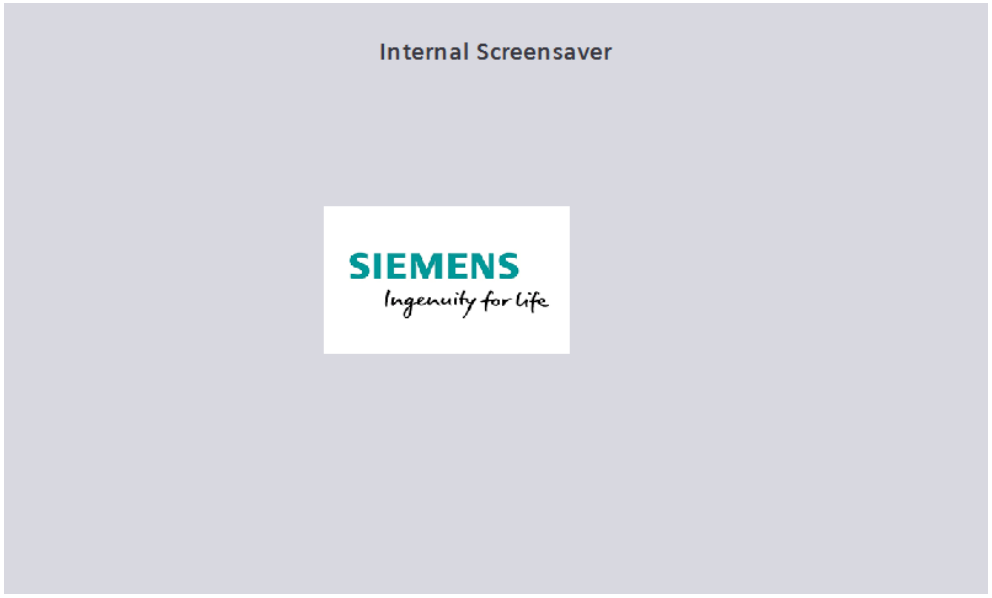
18 Simplifying operation – Screen saver

18.1 General description

Use a screen saver to protect the screen of the SIMATIC Panel. You may define yourself a screen saver object (e.g. your Company logo) using the screen savers included in this application example.

Dimming the screen brightness also protects the SIMATIC Panel.

Figure 18-1



This application example describes two ways to configure a screen saver:

1. **Solution without controller**
   The screen saver is enabled when the screen has not changed for a time longer than a specific, adjustable period (minimum: 1 minute).
   If the operator uses the panel without changing the screen, the screen saver will be enabled nevertheless in this solution.

2. **Solution with controller**
   The screen saver is enabled when no operation has taken place on the operator panel for a time longer than a specific, adjustable period. This solution evaluates both the active screen and the active object with the result that the screen saver is only enabled when no operation occurs.

18.1.1 Hardware and software components

Solution without controller

This application example is valid for:

- SIMATIC WinCC Comfort / Advanced V15.1
- SIMATIC Comfort Panels, Comfort PRO Panels, Outdoor Panels, Mobile Panels 2nd Generation
- SIMATIC WinCC RT Advanced V15.1

Solution with controller

This application example is valid for:

- SIMATIC STEP 7 Basic / Professional V15.1
- SIMATIC WinCC Comfort / Advanced V15.1
- SIMATIC Comfort Panels, Comfort PRO Panels, Outdoor Panels, Mobile Panels 2nd Generation
- SIMATIC WinCC RT Advanced V15.1
- SIMATIC S7-1200 / S7-1500

18.1.2 Data types and function blocks used

This section explains the functions of the function blocks and data types used in the tool.

LHmiOper_CheckPanelActivity

The function block "LHmiOper_CheckPanelActivity" calculates if the screen saver shall be enabled, as well as the position in x and y for the logo moving through the screen.

The function block randomly calculates the values output parameter "x position" and "y position" between "0" and the maximum values set in the control cycle.

Figure 18-2: Function block "LHmiOper_CheckPanelActivity"

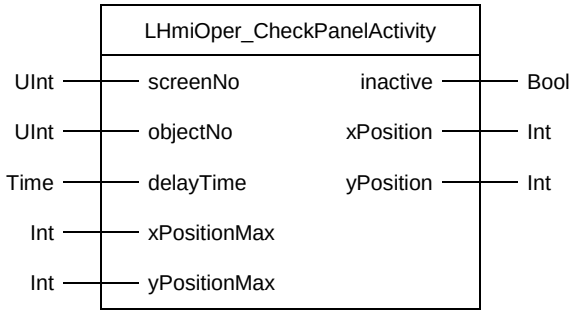


Table 18-1: LHmiOper_CheckPanelActivity parameters

Name	P type	Data type	Comment
screenNo	IN	UInt	Pointer to screen number
objectNo	IN	UInt	Pointer to current object

Name	P type	Data type	Comment
delayTime	IN	Time	Period of time which must elapse at least between short and long clicking
xPositionMax	IN	Int	Maximum x coordinate for the logo
yPositionMax	IN	Int	Maximum y coordinate for the logo
inactive	OUT	Bool	Screen saver status
xPosition	OUT	Int	x coordinate for the logo
yPosition	OUT	Int	y coordinate for the logo

18.1.3 VBS scripts used

This section explains the functions of the scripts used in the tool.

LHmiOper_vbsActivateIntScreensaver

The script "LHmiOper_vbsActivateIntScreensaver" activates the screen "LHmiOper_IntScreensaver" and determines the time in which the screen saver is called.

LHmiOper_vbsActivateExtScreensaver

The script "LHmiOper_vbsActivateExtScreensaver" activates the screen "LHmiOper_ExtScreensaver".

LHmiOper_SetBrightnessScreensaver

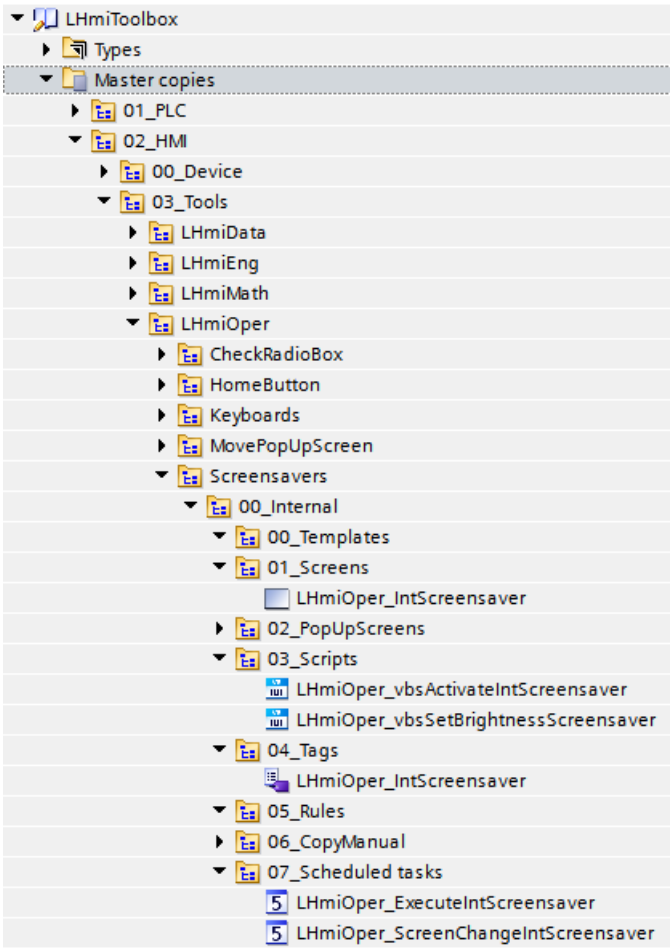
The script "LHmiOper_SetBrightnessScreensaver" sets the screen brightness for your SIMATIC Panel to the percentage value of the transferred "brightness" parameter.

18.2 Integration into the user project

18.2.1 Integration without controller

1. Open your WinCC configuration and the library with the tools (Section 2.3).
2. Open the folder "Master copies > 02_HMI > 03_Tools > LHmiOper > Screensavers > 00_Internal" of the library.
3. Drag the elements (Screen, Scripts, Tag table, Tasks) to the corresponding folder of the operator panel.

Figure 18-3



Note

Depending on the size of the HMI operator panel, it may be necessary to adapt the screen.

4. Open the script "LHmiOper_vbsActivateIntScreensaver".

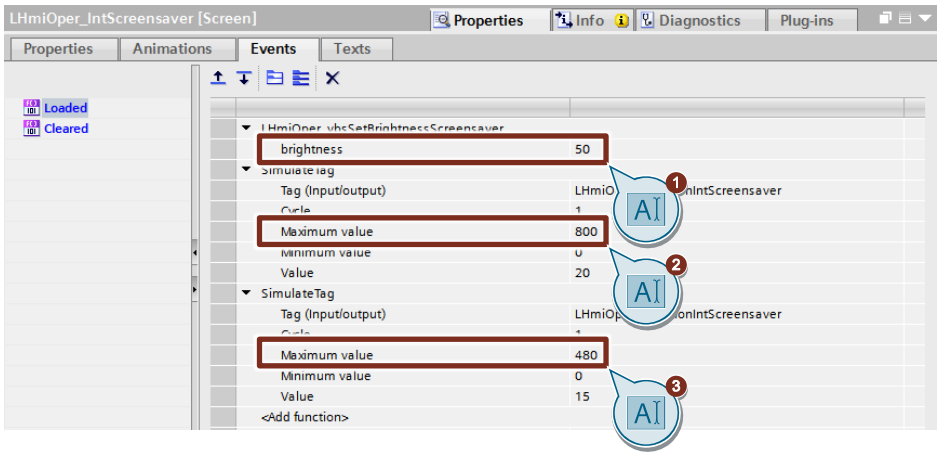
   In line 5, enter a time in minutes after which the screen saver is to be activated (in the example: 2 minutes).

   Figure 18-4

```
1 Sub LHmiOper_vbsActivateIntScreensaver()
2
3 SmartTags("LHmiOper_ActivityIntScreensaver") = SmartTags("LHmiOper_ActivityIntScreensaver") + 1
4
5 If SmartTags("LHmiOper_ActivityIntScreensaver") = 2 Then
6   ActivateScreen "LHmiOper_IntScreensaver",0
7 End If
8
9 End Sub
```

5. Open the "LHmiOper_IntScreensaver" screen.
6. Adjust the parameters screen brightness as well as the x position and y position of the screen (logos) to your screen size.
   Depending on the settings, the x and y position is calculated in a predefined cycle and the logo is moved through the screen using the "Direct movement" event.

   Figure 18-5

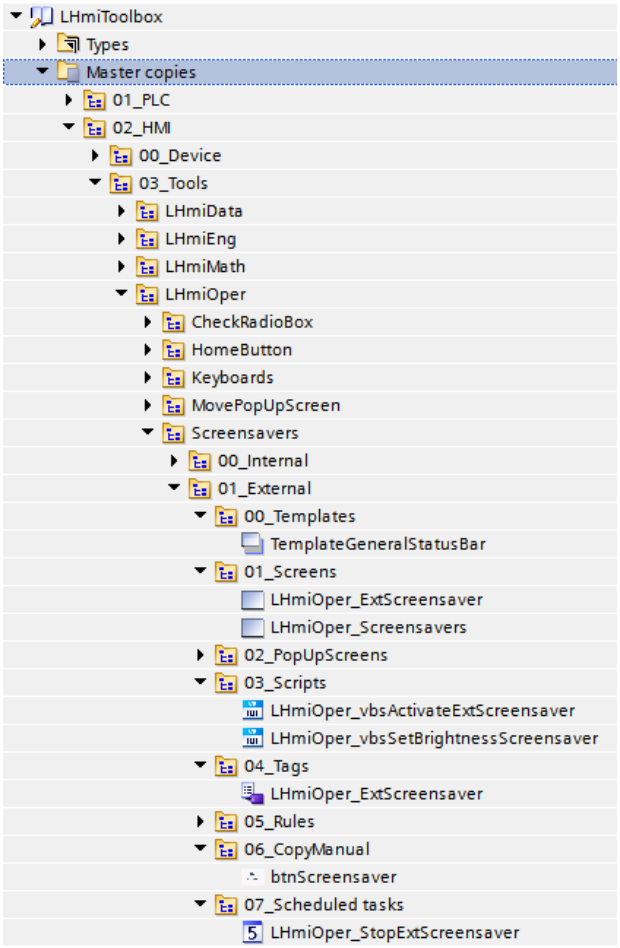


7. Download the software to your operator panel or start the simulation.

18.2.2 Integration with controller

1. Open your WinCC configuration and the library with the tools (Section 2.3).
2. Open the folder "Master copies > 02_HMI > 03_Tools > LHmiOper > Screensaver > 01_External" of the library.
3. Drag the elements (Template, Screens, Scripts, Tag table, Tasks) to the corresponding folder of the operator panel.

Figure 18-6



Note

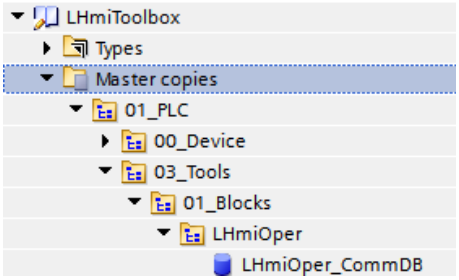
Depending on the size of the HMI operator panel, it may be necessary to adapt the screen.

If your HMI connection to the PLC is not called "HMI_Connection_1", update your HMI connection in the tag table.
You must also synchronize the HMI tags again with the PLC tags.

4. Drag the "btnScreensaver" button from the library to your screen. You open the tool with this button.

5. Drag the data block "LHmiOper_CommDB" to the "Program blocks" folder of your PLC.

   Figure 18-7



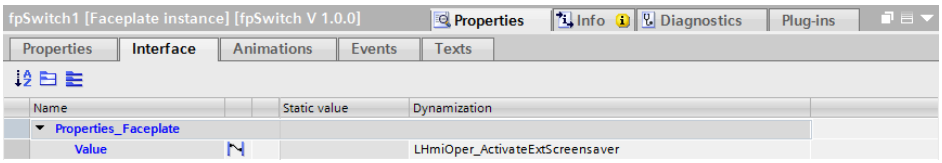
   Note
   All tags that are required for the screen saver have the prefix "screensaver".

   If you have already integrated the data block in connection with another tool, you can skip this step.

6. Open the "LHmiOper_Screensavers" screen.
7. Select the switch and open the block interface with "Properties > Interface".

   Connect the "LHmiOper_ActivateExtScreensaver" tag to the "Value" property of the "Properties_Faceplate" category.

   Figure 18-8

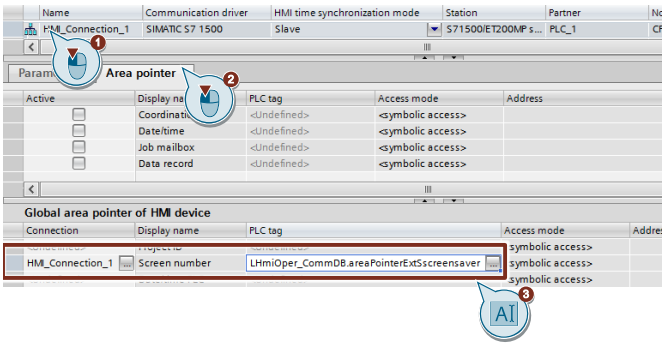


   Note
   In the example project, the external screen saver is activated with a switch. If you want to activate it permanently, follow these steps:

   - At the "Loaded" event of the start screen, add the system function "SetTag".
   - Select the HMI tag "LHmiOper_ActivateExtScreensaver" and set the value to 1. The screen saver is set to "active" as a result.

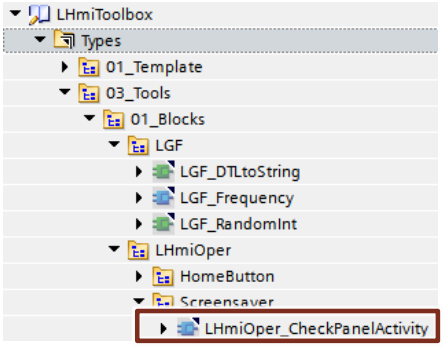
8. Open the "Connections" editor of the HMI operator panel and select the connection "HMI_Connection_1".

9. Configure the global area pointer for the screen number.
   - PLC tag: "LHmiOper_CommDB.areaPointerExtScreensaver"
   - Connection: "HMI_Connection_1"



10. Open the folder "Types > 03_Tools > 01_Blocks > LHmiOper > Screensaver" of the library.
11. Drag the function block "LHmiOper_CheckPanelActivity" to the "Program blocks" folder of your PLC.

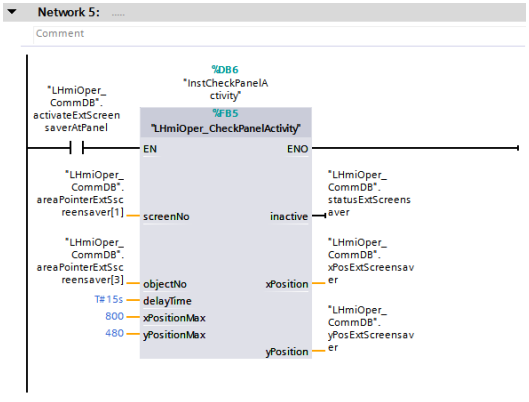
    Figure 18-9



12. Call the function block "LHmiOper_CheckPanelActivity" in your user program and interconnect the inputs and outputs with the corresponding tags of the communication DB.

    For the "delayTime" set the time of inactivity after which the screen saver is to be activated.

    Figure 18-10

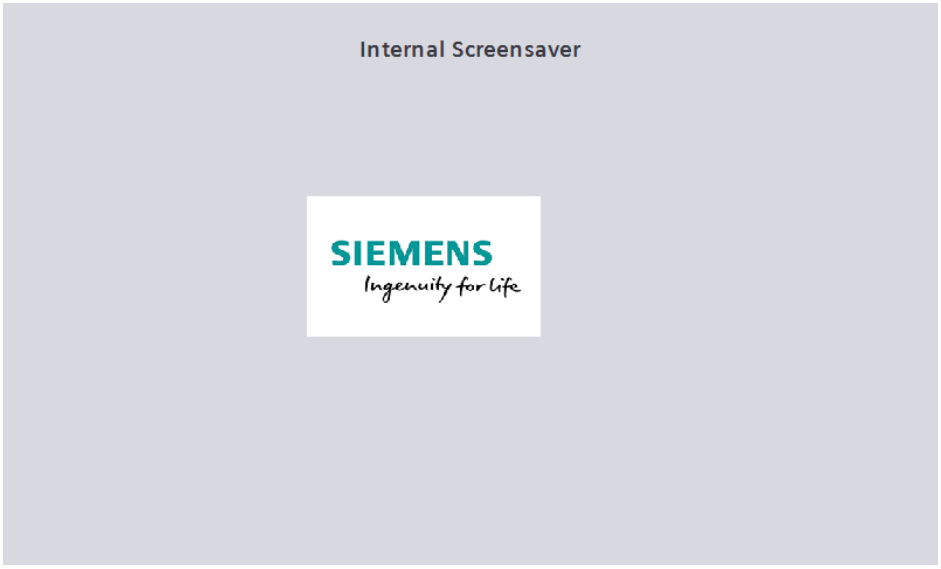


13. Download the software to your operator panel and your PLC or start the simulation.

18.3 Operation

1. Open the visualization on your operator panel.
2. Wait for 1 minute without operation. The internal screen saver opens.

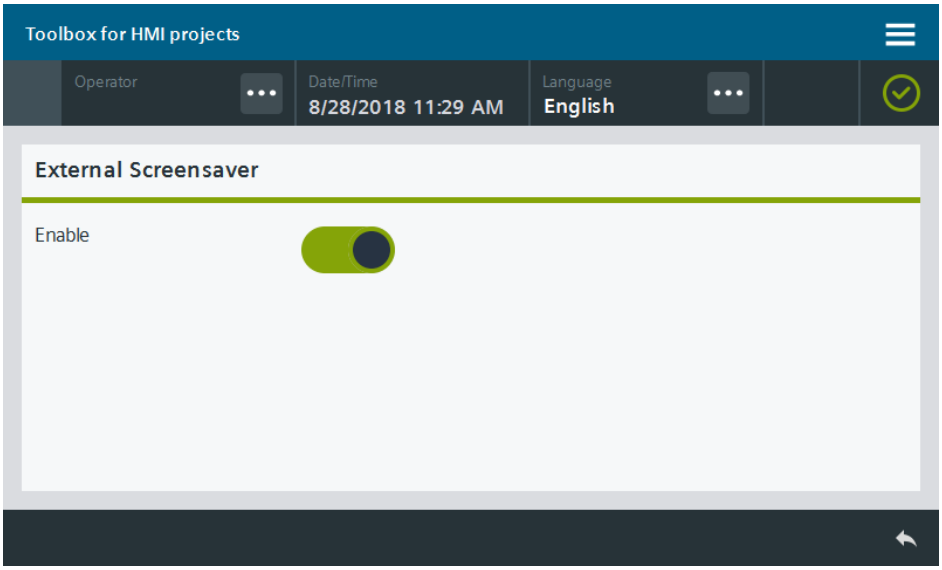
   Figure 18-11



3. Open the Tools overview and click on the "Screensaver" button.

   Tip/click the screen to close the internal screen saver and activate the previous screen.
4. Activate the switch.

   Figure 18-12



5. Wait for 15 seconds. The external screen saver opens.
6. Tip/click the screen to close the external screen saver and activate the previous screen.

19 Simplifying operation – Checkbox/Radio button

19.1 General description

The standard version of SIMATIC WinCC Comfort / Advanced contains checkboxes and radio buttons only for SIMATIC WinCC Professional. The application example contains faceplates for checkboxes / radio buttons that you can use in your configuration.

You can set the number of checkboxes and radio buttons as needed (up to 8) at the interface of the faceplates.

The selection is made available as status value at the interface of the faceplates. The boxes are binary encoded. Thus, the decimal value results from the binary encoding.

Figure 19-1

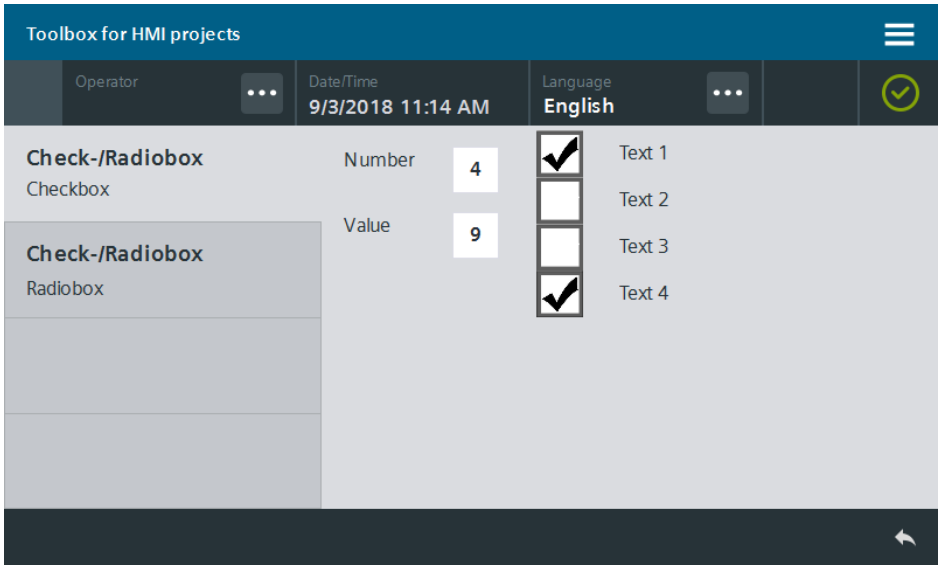
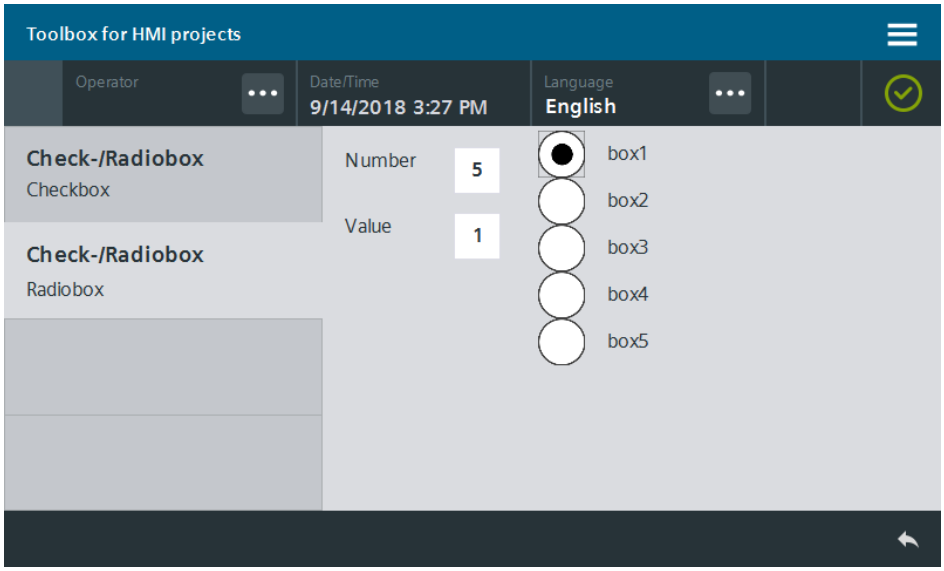


Figure 19-2



19.1.1 Hardware and software components

This application example is valid for:

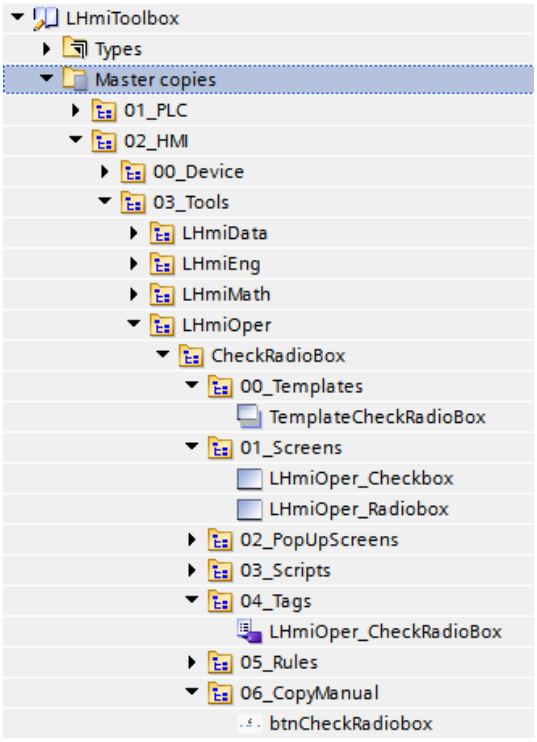
- SIMATIC WinCC Comfort / Advanced V15.1
- SIMATIC Comfort Panels, Comfort PRO Panels, Outdoor Panels, Mobile Panels 2nd Generation
- SIMATIC WinCC RT Advanced V15.1

Note Unlike a classic radio button in which one option always remains active, all options can be deselected with this radio button.

19.2 Integration into the user project

1. Open your WinCC configuration and the library with the tools (Section 2.3).
2. Open the folder "Master copies > 02_HMI > 03_Tools > LHmiOper > CheckRadioBox" of the library.
3. Drag the elements (Template, Screens, Tag table) to the corresponding folder of the operator panel.

Figure 19-3

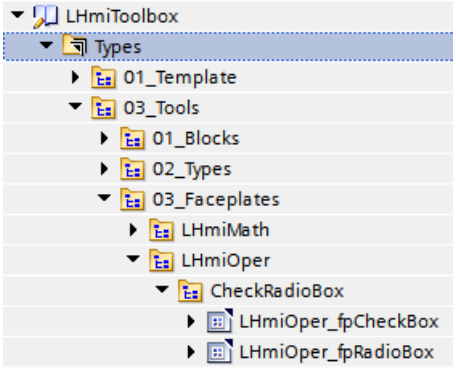


Note

Depending on the size of the HMI operator panel, it may be necessary to adapt the screens.

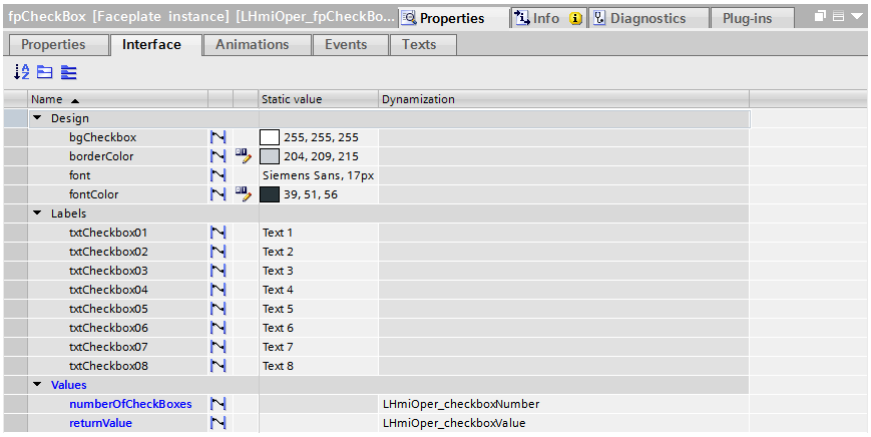
4. Drag the "btnCheckRadiobox" button from the library to your screen. You open the tool with this button.
5. Open the folder "Types > 03_Tools > 03_Faceplates > LHmiOper > CheckRadiobox" of the library.

Figure 19-4



6. Open a screen and copy the desired faceplate "LHmiOper_fpCheckBox" or "LHmiOper_fpRadioBox" to your screen.
   The faceplate is automatically copied to your project library.
7. Select the faceplate and open the interface of the faceplate.

   Figure 19-5



8. Connect the associated tags from the tag table to the properties of the "Values" category.
   Use the property "numberOfxxxx" to specify how many of the checkboxes or radio buttons are displayed (maximum of 8). Use the property "returnValue" to read which checkboxes or radio buttons are selected.
9. Set the labeling texts next to the individual boxes.
   You configure the labeling texts with the properties of "Labels" category.
   You specify the style of the faceplate in the "Design" category.
10. Download the software to your operator panel or start the simulation.

Note

The faceplates can also be used outside of the screens "LHmiOper_Checkbox" and "LHmiOper_Radiobox".

The screens serve as an example for the integration.

19.3 Operation

Note

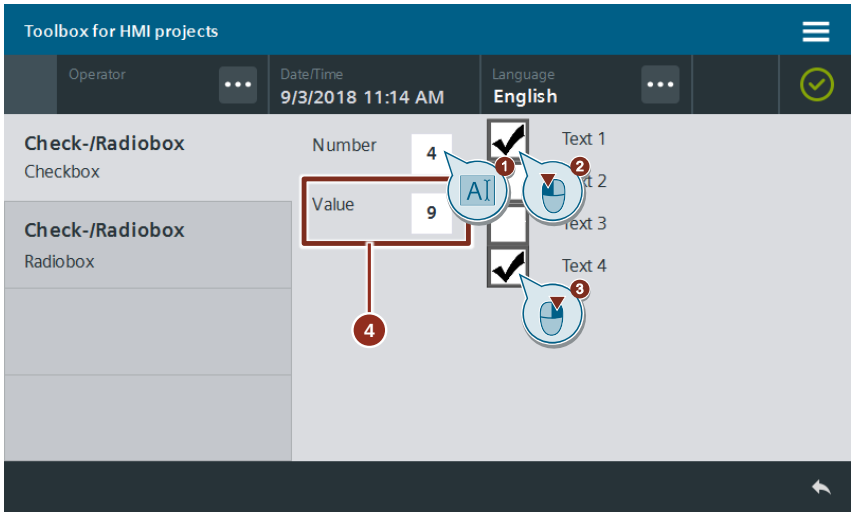
The operation is explained with the help of the example project. When you use the tool in your own configuration, the call may be somewhat different.

The basic functionalities are not affected by this.

1. Open the visualization on your operator panel.
2. Open the tools overview and click on the "Check/radiobox" button.
   The screen with the faceplate for the checkbox opens.
3. Enter a number for the checkboxes that are going to be displayed.

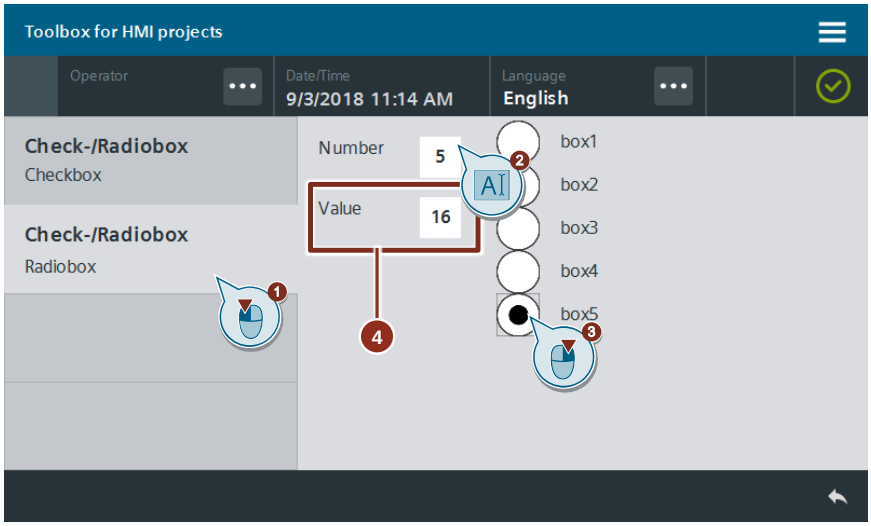
   Select the checkboxes of your choice.
   The associated decimal value is displayed in the "Value" I/O field.

   Figure 19-6



4. Open the screen with the faceplate of the radio button using the "Check-/Radiobox - Radiobox" button in the page navigation on the left.
5. Enter a number for the radio buttons that are going to be displayed.
6. Select a radio button of your choice.
   The associated decimal value is displayed in the "Value" I/O field.

   Figure 19-7



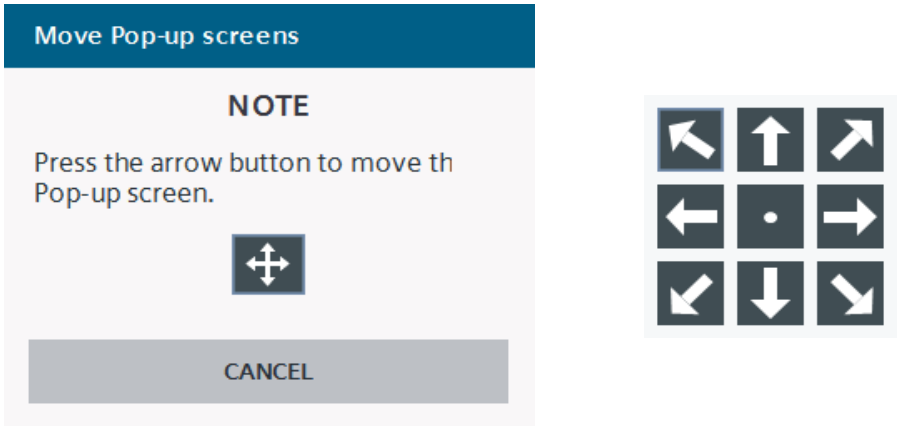
20 Simplified operation – Moving pop-up screens

20.1 General description

As of WinCC Comfort / Advanced V13 SP1 you can use pop-up screens in the configuration. This is useful, for example, to display notes independently of the currently opened screen. You can also source out process variables which are only needed on request by the operator and save performance this way.

The call of the pop-up screens is static and cannot be adapted to the runtime. The "Move pop-up screens" tool helps you expand the scope of functions of your pop-up screens. The operator may move pop-up screens during runtime with the help of a move button so that operating elements in the background become visible. A pop-up screen offers various options for moving to the user.

Figure 20-1



20.1.1 Hardware and software components

This application example is valid for:

- SIMATIC WinCC Comfort / Advanced V15.1
- SIMATIC Comfort Panels, Comfort PRO Panels, Outdoor Panels, Mobile Panels 2nd Generation
- WinCC RT Advanced V15.1

20.1.2 VBS scripts used

This section explains the functions of the scripts used in the tool.

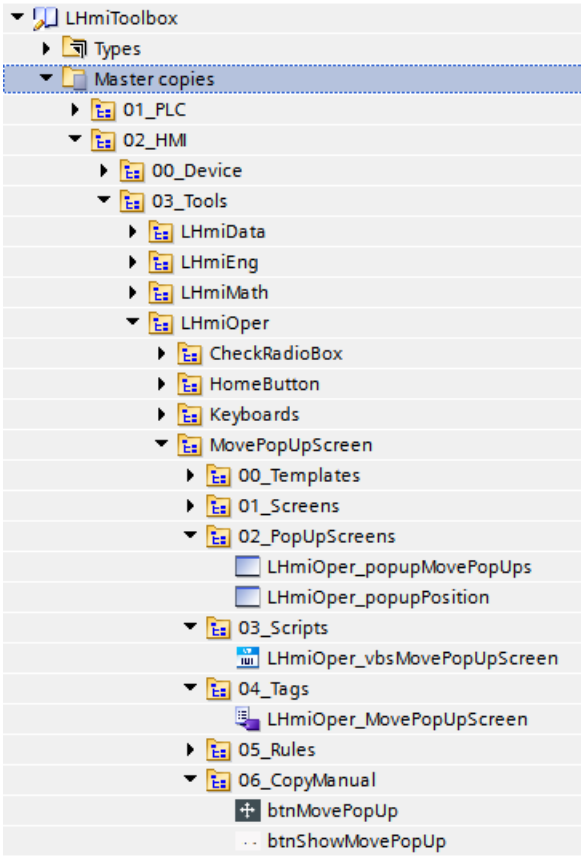
LHmiOper_vbsMovePopUpScreen

The "LHmiOper_vbsMovePopUpScreen" script calculates the new position of the pop-up screen based on the screen size, the parameters of the pop-up screen and the pressed position button. The pop-up screen is subsequently called at the new position.

20.2 Integration into the user project

1. Open your WinCC configuration and the library with the tools (Section 2.3).
2. Open the folder "Master copies > 02_HMI > 03_Tools > LHmiOper > MovePopUpScreen" of the library.
3. **Drag the elements ("LHmiOper_popupPosition" pop-up screen, Script, Tag table) to the corresponding folder of the operator panel.**

Figure 20-2



Note

Depending on the size of the HMI operator panel, it may be necessary to adapt the pop-up screen.

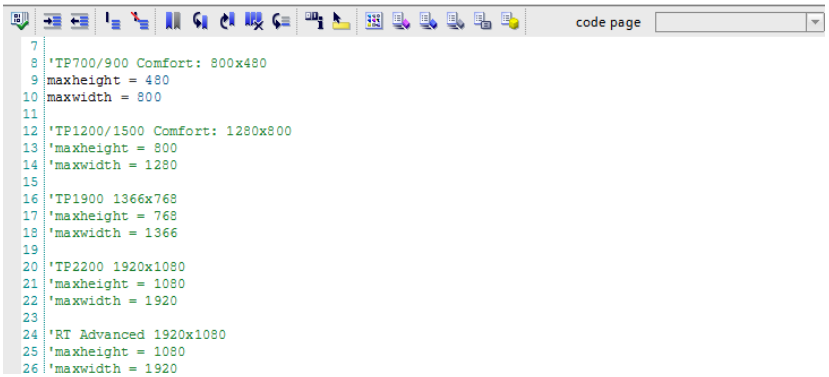
The library also contains the pop-up screen "LHmiOper_popupMovePopUps" and the button "btnShowMovePopUp". They are needed for the example project and are not part of the tool.

The pop-up screen "LHmiOper_popupMovePopUps" contains the button "btnMovePopUp" and only serves as an example for the integration of the tool into a pop-up screen.

The button "btnShowMovePopUp" is used to call the pop-up screen "LHmiOper_popupMovePopUps" in a screen.

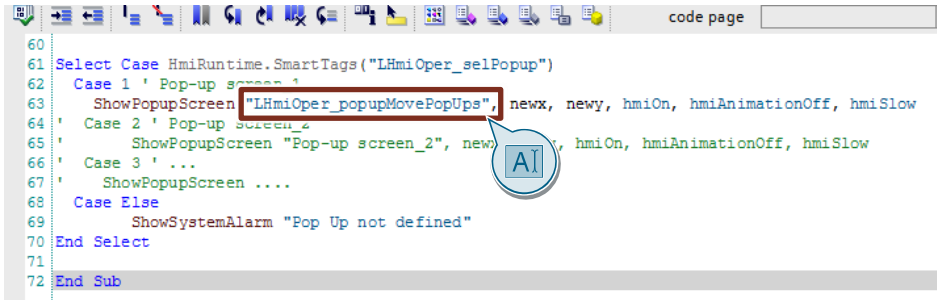
4. Open the script "LHmiOper_vbsMovePopUpScreen" and set the values for "maxheight" and "maxwidth" according to the screen size of the HMI operator panel used.

   Figure 20-3



5. In the first "Case" instruction (line 62), change the transfer parameter of the system function "ShowPopUpScreen" to the name of your pop-up screen by using the tool.

   Figure 20-4

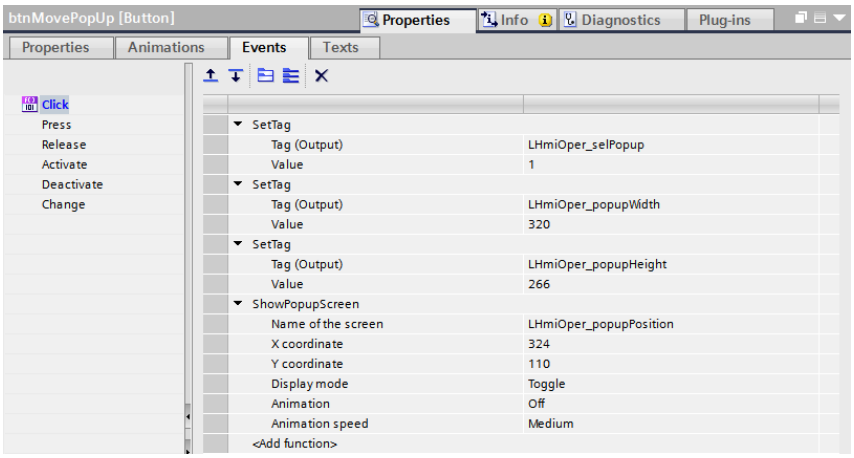


Note

If you are using the tool in multiple pop-up screens, add additional "Case" instructions with the next higher value for the locations of use.

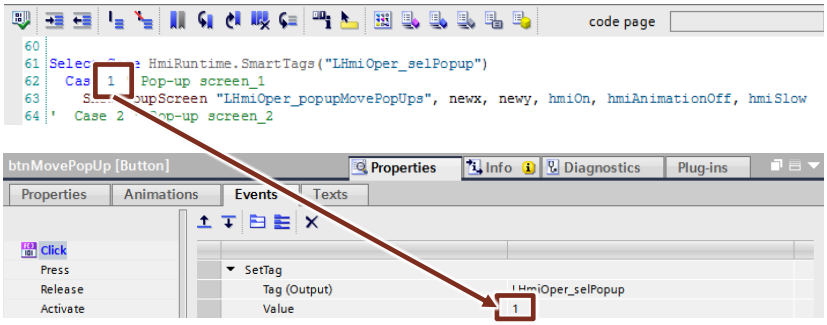
6. Open a pop-up screen in which you want to use the tool.
7. Drag the "btnMovePopUp" button from the library (see Figure 20-2) to your pop-up screen. You open the tool with the button.
8. Select the button and open the "Events" of the button. Open the "Click" event.

   Figure 20-5



In the "SetTag" system function, change the value of the "LHmiOper_selPopup" tag. The value must be identical to the value you have used in the script in the "Case" instruction for calling the corresponding pop-up screen.

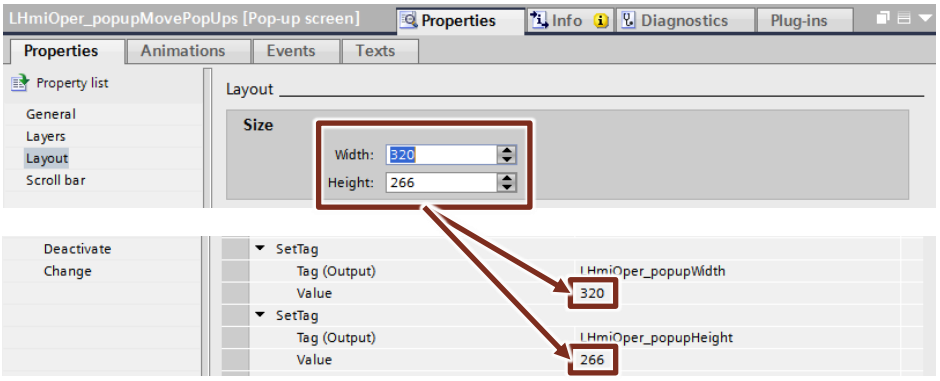
Figure 20-6



9. In the "SetTag" system function, change the value of the "LHmiOper_popupWidth" and "LHmiOper_popupHeight" tags to the width and height of your pop-up screen by using the tool.

   You can find these values in the properties of the pop-up screen in the area "Layout > Size".

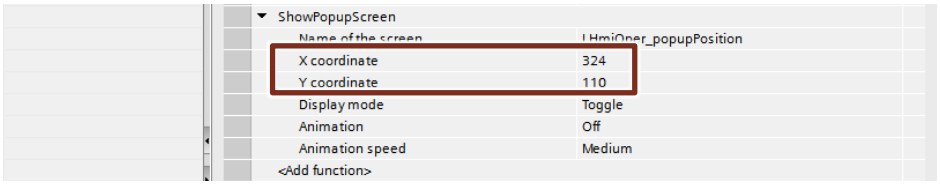
   Figure 20-7



10. **Optional**

    Adjust the x and y coordinate for calling the pop-up screen "LHmiOper_popupPosition".

    Figure 20-8



Note

The pop-up screen "LHmiOper_popupPosition" is called after pressing the move button "btnMovePopUp" and offers the user a button with moving options.

11. Download the visualization to your operator panel or simulate it.

20.3 Operation

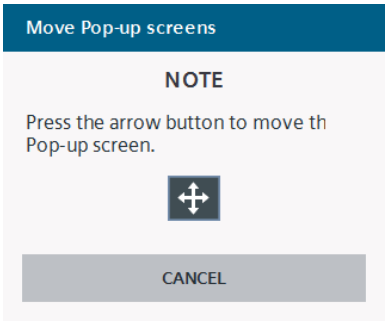
Note

The operation is explained with the help of the example project. When you use the tool in your own configuration, the call may be somewhat different.

The basic functionalities are not affected by this.

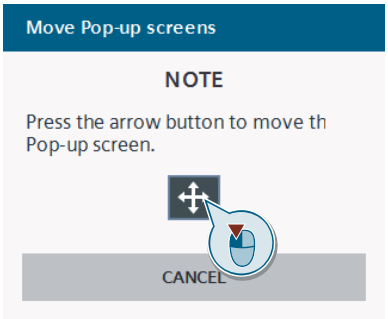
1. Open the visualization on your operator panel.
2. Open the Tools overview and click on the "Move Pop-up" button. The pop-up screen "Move Pop-up screens" with the move button opens.

   Figure 20-9



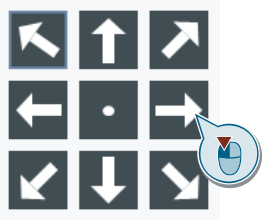
3. Press the move button. A pop-up screen with the nine moving options opens.

   Figure 20-10



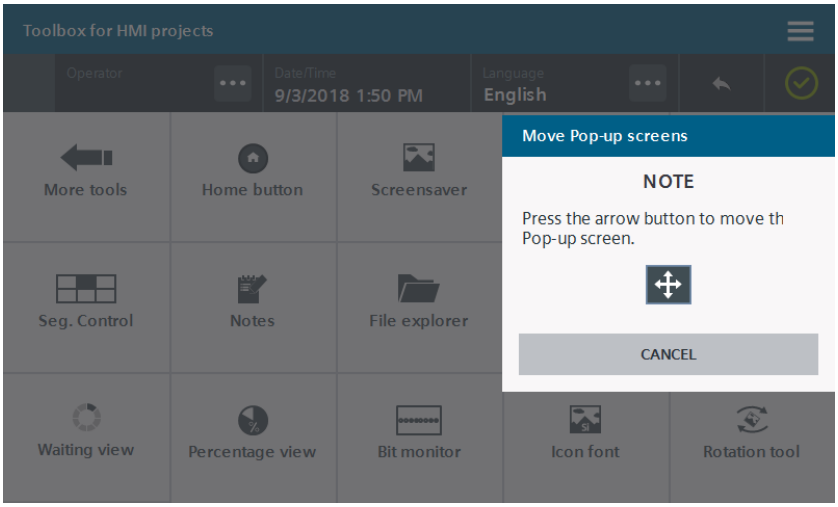
4. Press a button of your choice.

   Figure 20-11



5. The pop-up screen "Move Pop-up screens" is moved and displayed at the selected position in the screen.

   Figure 20-12



6. Close the pop-up screen with the "Cancel" button.

21 Simplified operation – Segmented control

21.1 General description

A Segmented Control helps you clearly and quickly define the value of a process tag. This allows you to specify potential values beforehand and avoid operating errors.

This application example offers you four different faceplates for SIMATIC Comfort Panels / WinCC RT Advanced. The value range is divided up into values of 6 or 11. The difference between the values is always the same.

The value is selected with buttons and applied as tag value for the tag parameterized at the interface.

The labeling and display can be changed via the interface of the blocks.

LHmiOper_fpSegment6 / LHmiOper_fpSegment11

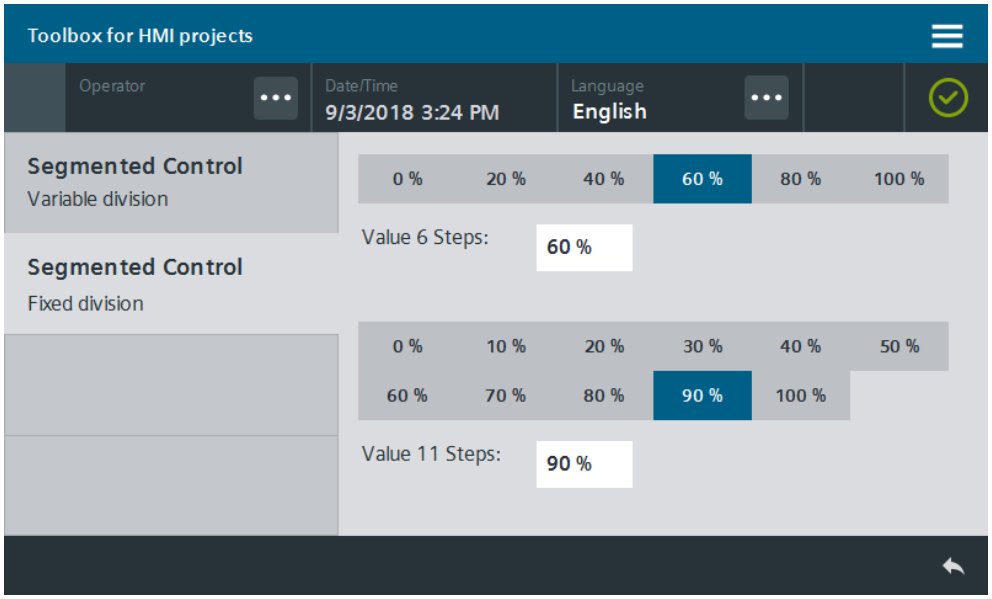
The value range of these faceplates is between 0 and 100.

It is divided up into 6 (steps of 20) or 11 (steps of 10) equidistant steps. The values are always integer values.

The values for minimum (0) and maximum (100) cannot be changed.

You can change the labeling for the unit via the block interface.

Figure 21-1



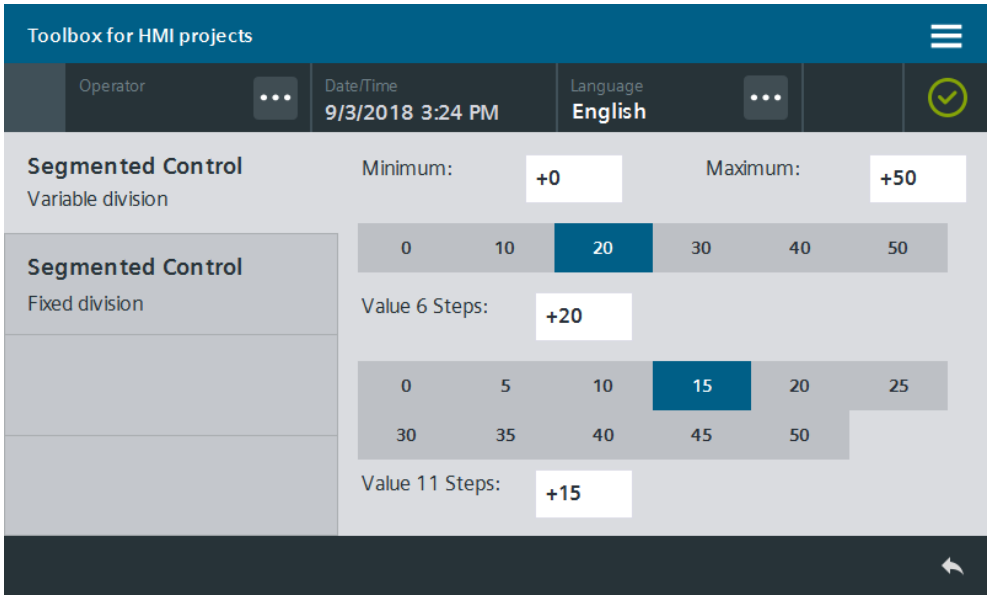
LHmiOper_fpSegmentMinMax6 / LHmiOper_fpSegmentMinMax11

The value range of these faceplates is between the values for minimum ("LHmiOper_minSegControl" tag) and maximum ("LHmiOper_maxSegControl" tag).

The range is divided up into 6 or 11 equidistant steps. The values are always integer values.

You can use the I/O fields to set the tag values during runtime as needed.

Figure 21-2



21.1.1 Hardware and software components

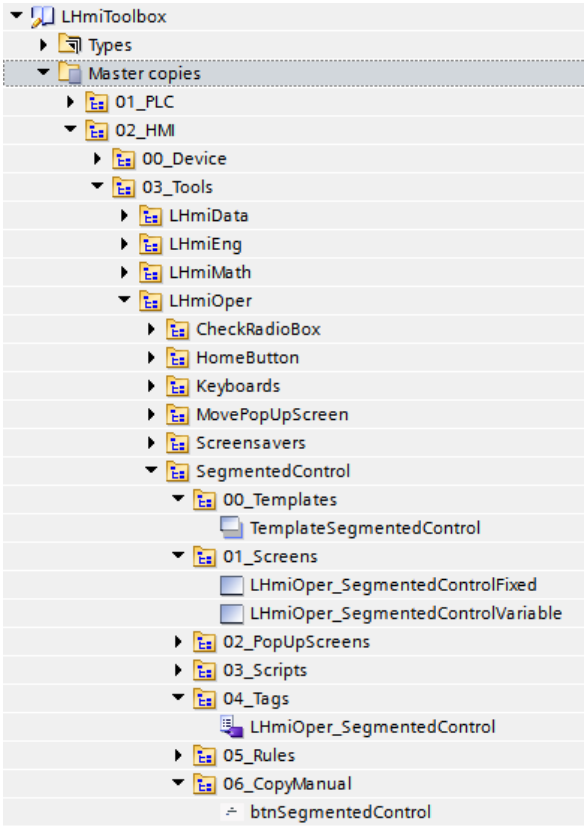
This application example is valid for:

- SIMATIC WinCC Comfort / Advanced V15.1
- SIMATIC Comfort Panels, Comfort PRO Panels, Outdoor Panels, Mobile Panels 2nd Generation
- SIMATIC WinCC RT Advanced V15.1

21.2 Integration into the user project

1. Open your WinCC configuration and the library with the tools (Section 2.3).
2. Open the folder "Master copies > 02_HMI > 03_Tools > LHmiOper > SegmentedControl" of the library.
3. **Drag the tag table to the corresponding folder of the operator panel.**

Figure 21-3

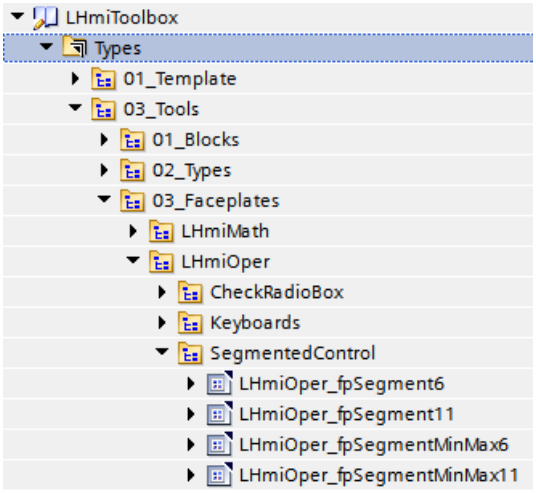


Note
The library also contains the template "TemplateSegmentedControl", the screens "LHmiOper_SegmentedControlFixed" and "LHmiOper_SegmentedControlVariable" as well as the button "btnSegmentedControl" for calling the "LHmiOper_SegmentedControlFixed" screen.

They are needed for the example project and are not part of the tool.

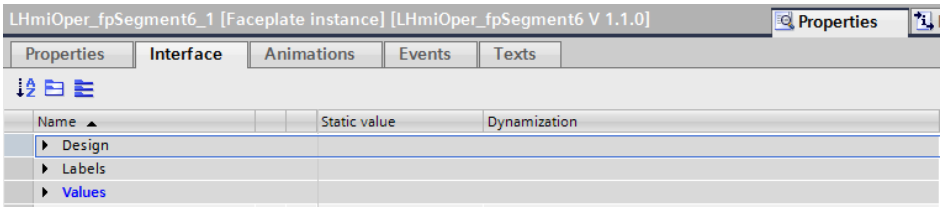
4. Open the folder "Types > 03_Tools > 03_Faceplates > LHmiOper > SegmentedControl" of the library.

   Figure 21-4



5. Open a screen of your choice. Drag and drop a segmented control of your choice to the screen. The faceplate is automatically copied to your project library.
6. Select the faceplate and open the interface of the faceplate.

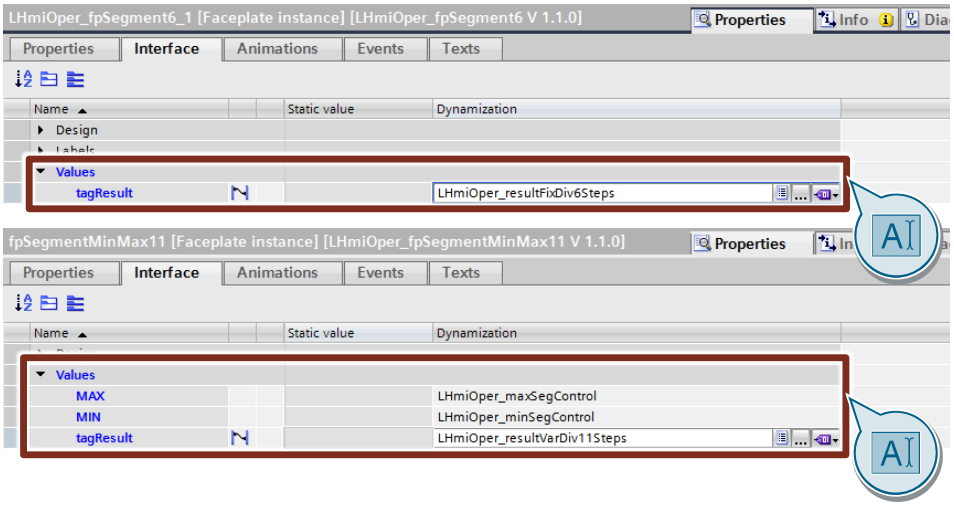
   Figure 21-5



7. Connect the associated tags from the tag table to the properties of the "Values" category.
   - "tagResult": Selected tag value

   Only for faceplates "LHmiOper_fpSegmentMinMax6" and "LHmiOper_fpSegmentMinMax11"
   - "MIN": Minimum value
   - "MAX": Minimum value

   Figure 21-6



8. **Optional**
   You configure the labeling texts for the buttons within the faceplates "LHmiOper_fpSegmented6" and "LHmiOper_fpSegmented11" with the properties of the "Labels" category.

   Figure 21-7

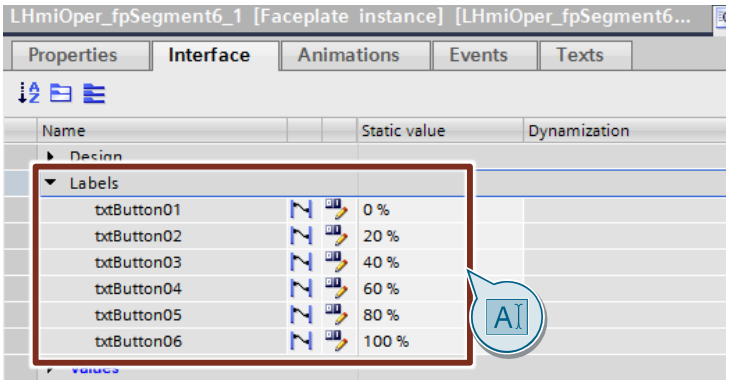
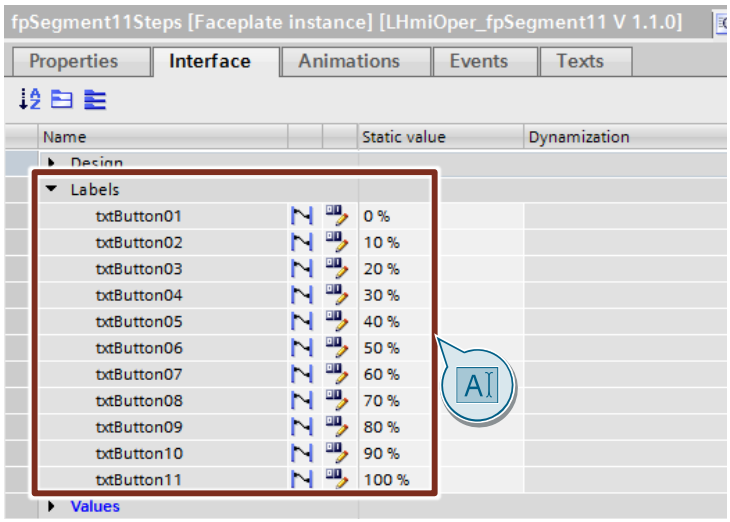


Figure 21-8



9. **Optional**
   You specify the style of the screen objects in the faceplate in the "Design" category.

   Figure 21-9

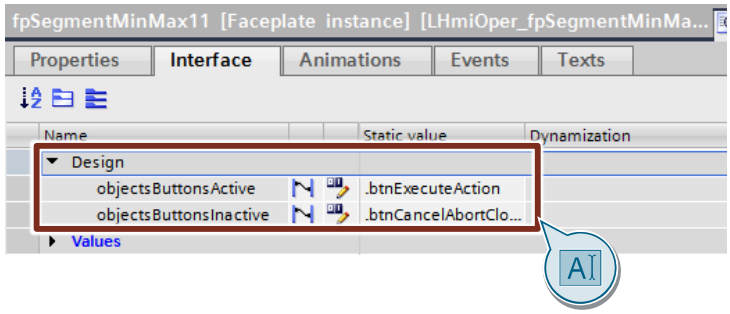
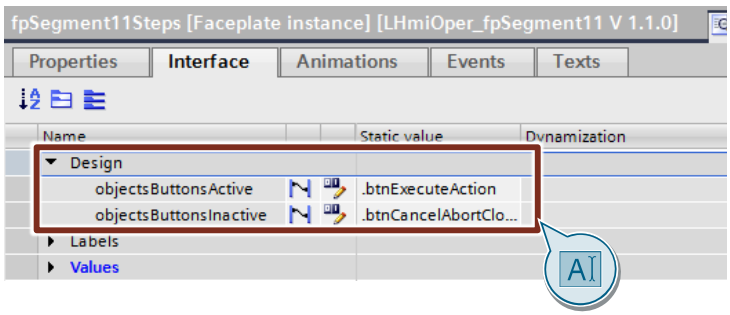


   Figure 21-10



10. Download the software to your operator panel or start the simulation.

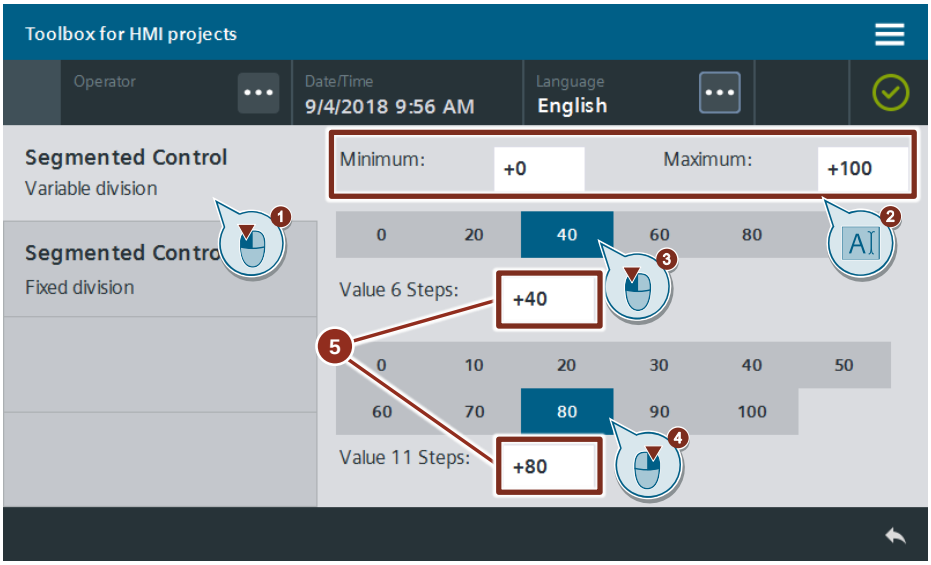
21.3 Operation

Note The basis for this chapter is the example project. The operation of the tool is described based on the example project.

1. Open the visualization on your operator panel.
2. Open the Tools overview and click on the "Seg. Control" button. The screen with the segmented controls opens.
3. Enter a value for minimum and maximum (2).

   Select a value for the two controls (3)(4). The value is written to the tag and displayed in the associated I/O field (5).

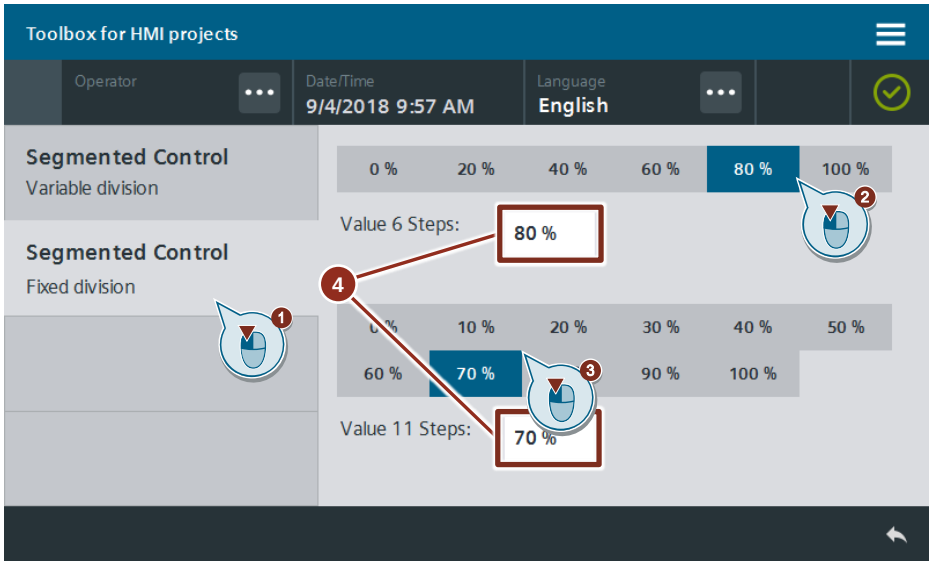
Figure 21-11



4. Use the "Segmented Control – Fixed division" button in the page navigation on the left to the screen with the controls in fixed division (1).

   Select a value for the two controls (2)(3). The value is written to the tag and displayed in the associated I/O field (4).

   Figure 21-12



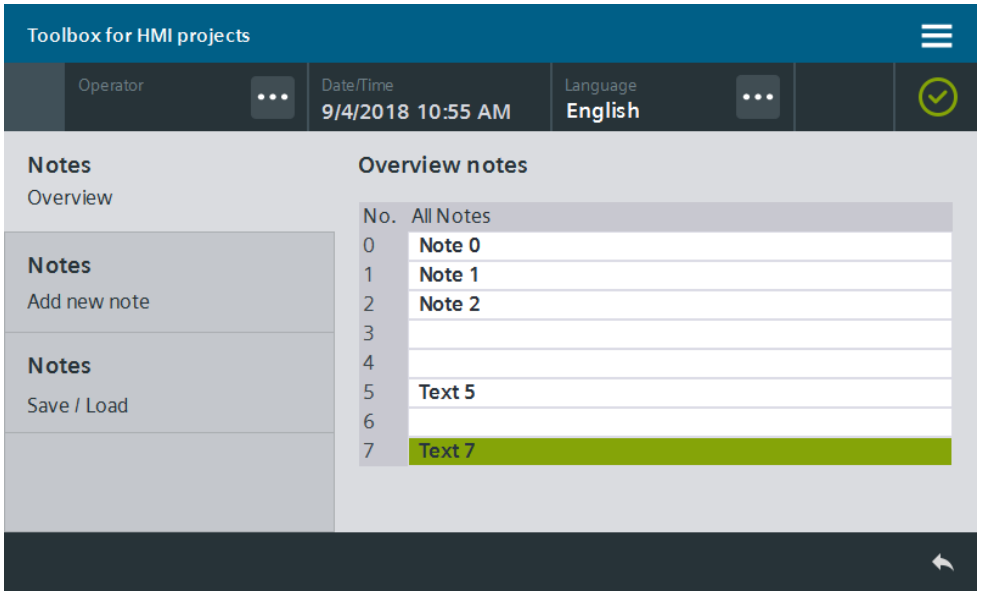
22 Increase clarity – Notes

22.1 General description

The Notes tool allows the operator of the panel / WinCC RT Advanced to process text notes. The tool saves the entered notes in a text file to the memory of the HMI operator panel.

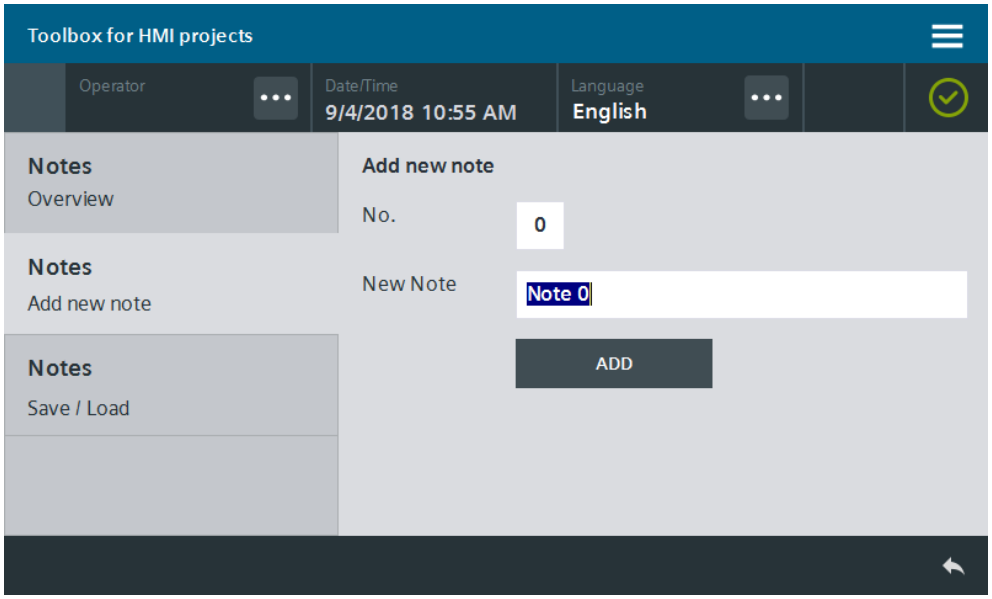
The tool provides an overview of all notes in the "Overview" area.

Figure 22-1



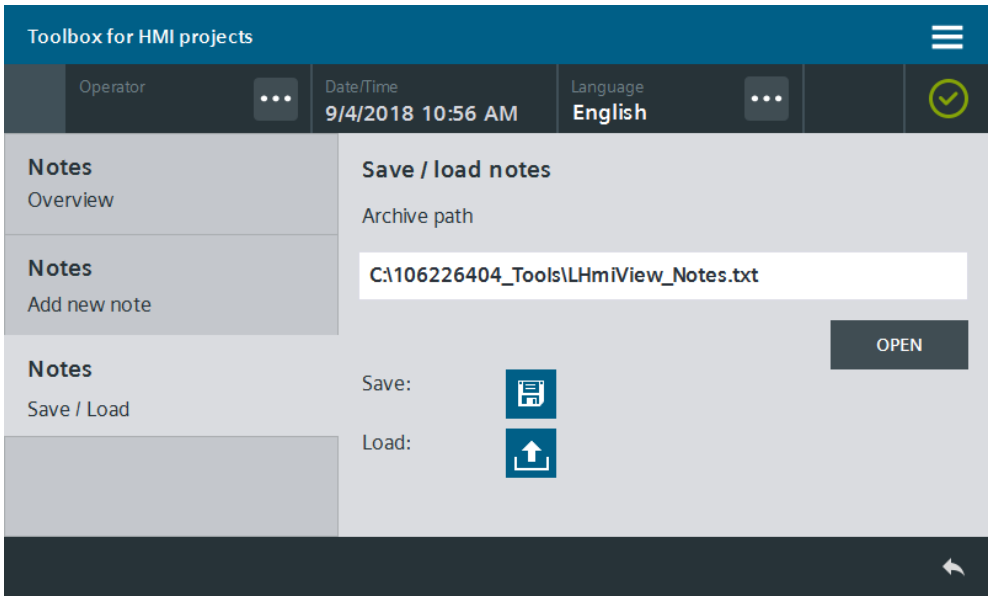
You create new notes or overwrite existing notes that you no longer need with the note number and note text.

Figure 22-2



The tool also lets you save notes and load them when needed.

Figure 22-3



22.1.1 Hardware and software components

This application example is valid for:

- SIMATIC WinCC Comfort / Advanced V15.1
- SIMATIC Comfort Panels, Comfort PRO Panels, Outdoor Panels, Mobile Panels 2nd Generation
- SIMATIC WinCC RT Advanced V15.1

22.1.2 VBS scripts used

This section explains the functions of the scripts used in the tool.

LHmiView_vbsCopyToCurrentNote

The "LHmiView_vbsCopyToCurrentNote" script copies the current note entry to the associated HMI tag depending on the note number (No.).

LHmiView_vbsCopyToNotes

The "LHmiView_vbsCopyToNotes" script copies the note entries to the associated HMI tags for the table view depending on the note number (No.).

LHmiView_vbsReadNotesFromDisk

The "LHmiView_vbsReadNotesFromDisk" script reads the note entries stored on the panel from the associated text file "LHmiView_Notes.txt" and saves them to the associated HMI tags for the table view depending on the note number (No.).

LHmiView_vbsWriteNotesFromDisk

The "LHmiView_vbsWriteNotesFromDisk" script writes the current note entries of the table view to a text file "LHmiView_Notes.txt" and saves them on the operator panel.

Note

The configuration of the file system differs, depending on the operating system (Windows / Windows CE) of your HMI operator panel.

As a result, the storage of the "LHmiView_Notes.txt" file is also different.

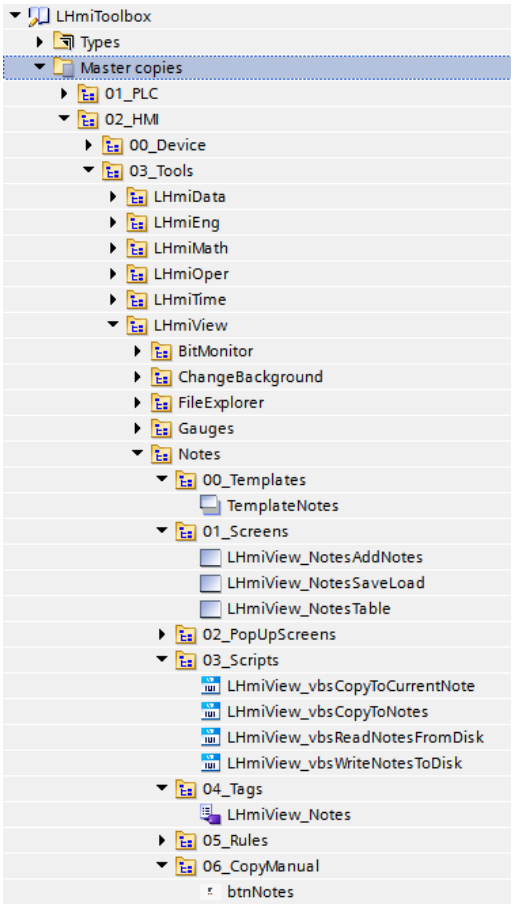
- Panels path: \flash\106226404_Tools\
- WinCC RT Advanced path: C:\106226404_Tools\

You can change the storage path in the script at any time.

22.2 Integration into the user project

1. Open your WinCC configuration and the library with the tools (Section 2.3).
2. Open the folder "Master copies > 02_HMI > 03_Tools > LHmiView > Notes" of the library.
3. Drag the elements (Template, Screens, Scripts, Tag table) to the corresponding folder of the operator panel.

Figure 22-4



Note

Depending on the size of the HMI operator panel, it may be necessary to adapt the screens.

4. Drag the "btnNotes" button from the library to a screen of your choice. You open the screen "LHmiView_NotesTable" with the Notes Overview with this button.
5. Download the visualization to your operator panel or simulate it.

22.3 Operation

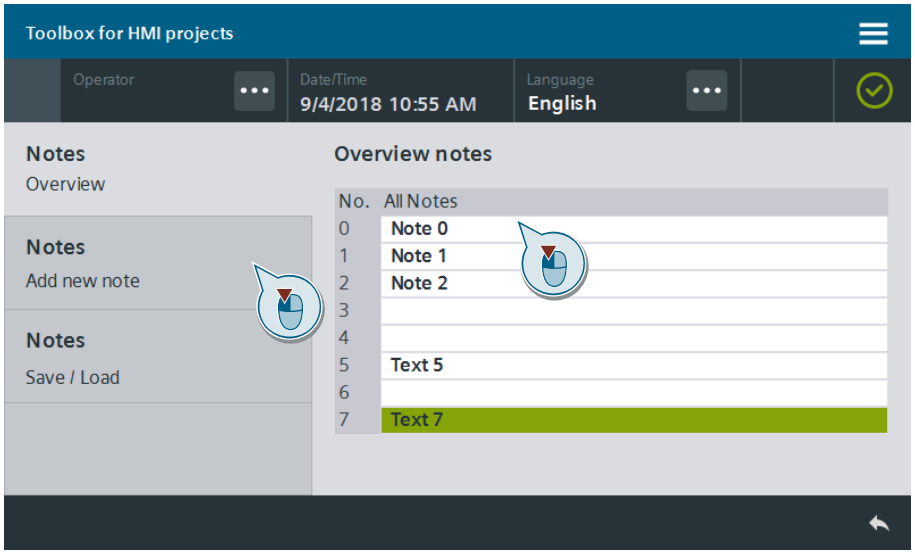
Note

The operation is explained with the help of the example project. When you use the tool in your own configuration, the call may be somewhat different.

The basic functionalities are not affected by this.

1. Open the visualization on your operator panel.
2. Open the Tools overview and click on the "Notes" button. The screen with the Notes Overview opens.
3. Open the screen for adding a new note with the "Notes – Add new note" button or click on the text entry of a note of your choice.

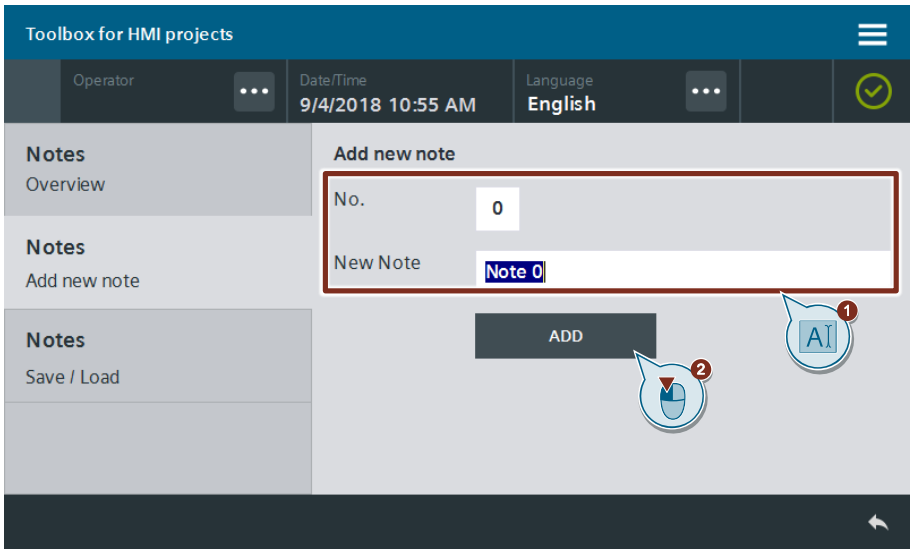
Figure 22-5



4. Enter a note number and note text of your choice (1).

   Click the "ADD" button to add the note (2).
   The screen with the Notes Overview opens and the note is added.

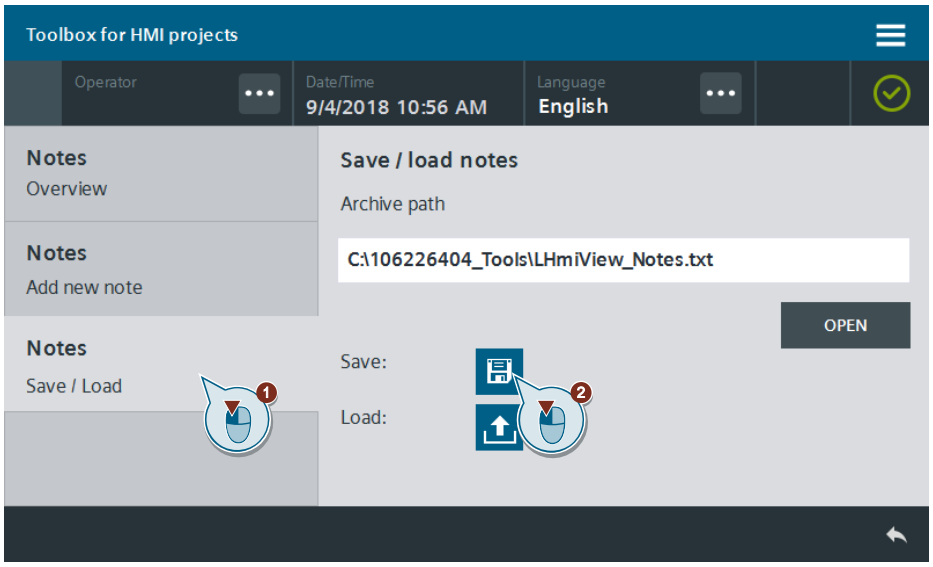
Figure 22-6



5. Open the screen for saving and loading notes with the "Notes – Save / Load" button in the page navigation on the left (1).

   Save the notes with the Save button (2).

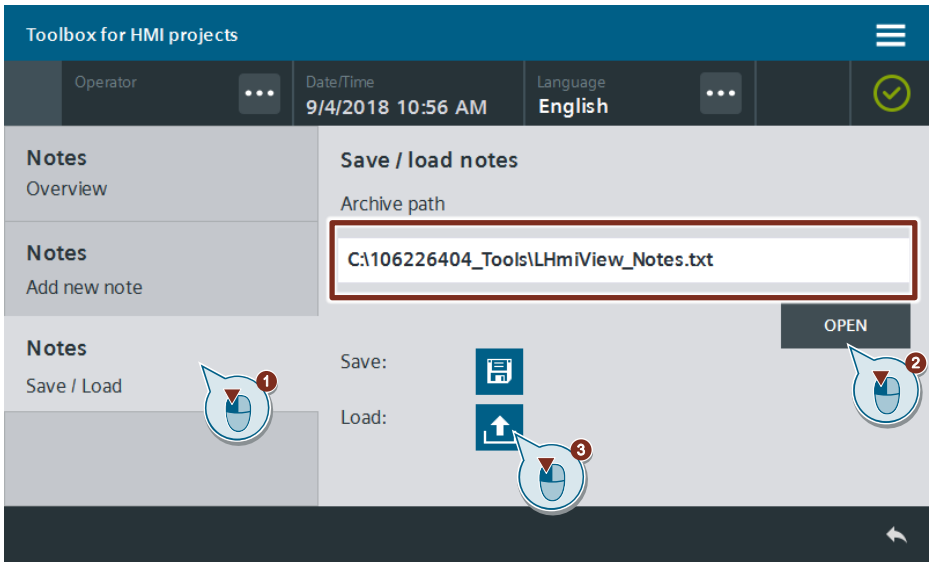
   Figure 22-7



6. Change a note of your choice.
7. Open the screen for saving and loading notes again (1).

   Select the saved note file with the "OPEN" button (2) and load it using the Load button (3).
   The saved notes are written to the HMI tag and displayed in the Notes Overview.

   Figure 22-8



23 Increase clarity – Gauge controls for Basic Panels

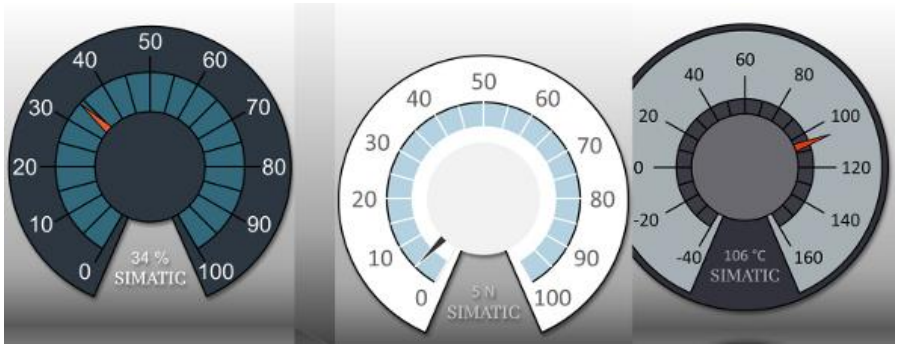
23.1 General description

Gauge controls are dynamic display objects that are able to visualize numeric values with the help of a pointer.

They are available for WinCC Comfort / Advanced / Professional under "Elements" in the "Tools" task card.

The following section shows how you can also use gauge controls with WinCC Basic.

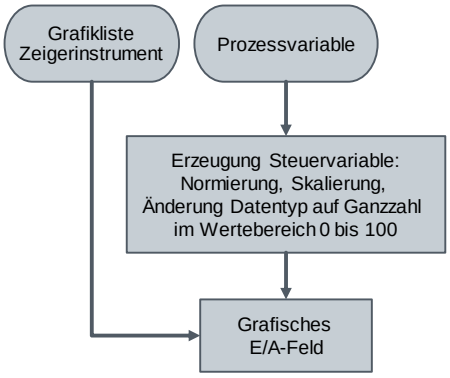
Figure 23-1



The gauge controls shown here are not controls as they are available for WinCC Comfort / Advanced / Professional. They are graphic lists whose elements are displayed via a graphic I/O field. The associated element of the graphic list is displayed based on a standardized process tag that is rounded to an integer number.

The library offers gauge controls with a value range from 0 to 100 and with a free scale. The predefined value range can be used, for example, to display percentage values.

Figure 23-2



23.1.1 Hardware and software components

This application example is valid for:

- WinCC Basic, Comfort, Advanced V15.1

- SIMATIC Basic Panels

23.2 Basics

Normalization of the control tags

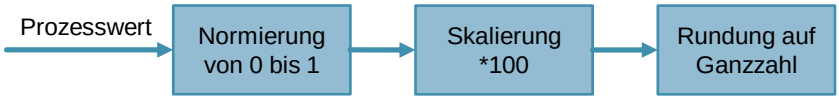
The graphic lists in this application example have 101 graphics each, representing integer values from 0 to 100.

The control tag must be of an "Integer" data type and have a value range from 0 to 100.

In the STEP 7 program, the following steps must be performed to convert the process tag into the control tag.

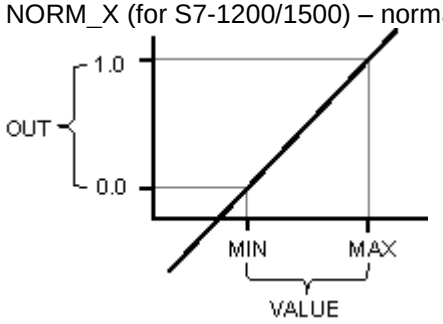
- Normalize and scale any value range to the value range from 0.0 to 100.0
- Round floating-point numbers to an "integer" data type value

Figure 23-3



The mathematical functions for calculating the control tags can be found in the "Instructions" task card, "Basic instructions" pane, in the "Conversion operations" and "Math functions" folders:

- NORM_X (for S7-1200/1500) – normalized from 0.0 to 1.0



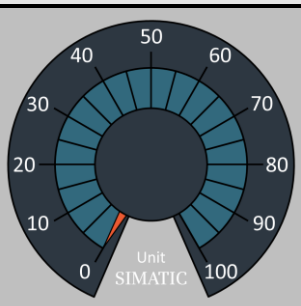
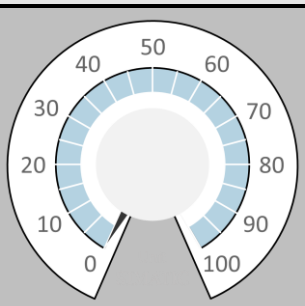
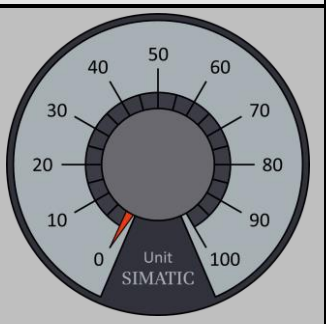
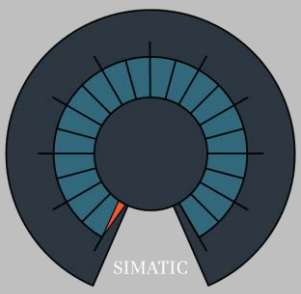
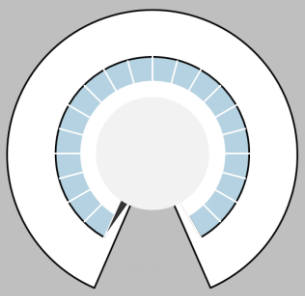
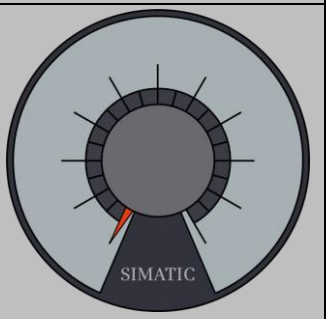
- MUL – multiply
- ROUND – round to the next integer
- TRUNC – truncate decimal places and convert to integer

Basics on gauge controls

The library included in the application example provides three different styles of gauge controls.

The "rotation tool" that can also be downloaded in this entry allows you to create similar gauge controls that suit your style.

Table 23-1

Style "Controlled Complexity"	style "Dynamics"	style "Reliability"
		
		

The gauge controls are available in sizes 200px * 200px and 300px * 300px.

Note

To save storage space, use only one gauge control style and size in the project, if possible.

Depending on the size, the graphic I/O field with the gauge control graphic list requires about 1.5 MB to 3.9 MB of storage space when first integrated into the project. Each additional use of the same graphic I/O field (same size and same graphic list) in the project requires only a very small amount of additional storage space.

Note

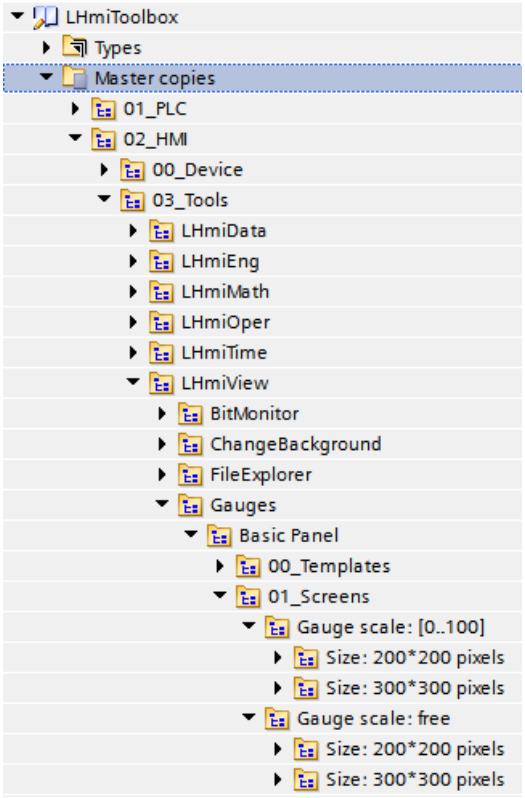
You can also use the gauge controls for SIMATIC Comfort Panels or WinCC RT Advanced.

23.3 Integration into the user project

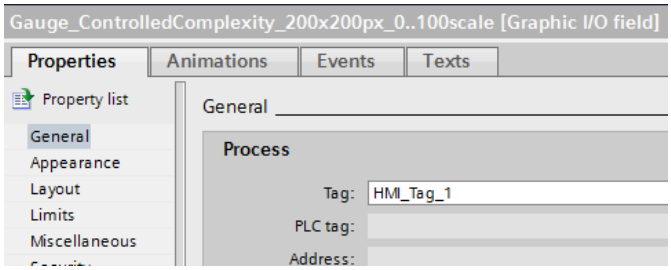
Note Requirement for the integration is that there is already an integer tag for connection to the gauge control in your project.

1. Open your WinCC configuration and the library with the tools (Section 2.3).
2. Open the folder "Master copies > 02_HMI > 03_Tools > LHmiView > Gauges" of the library.
3. Add a new screen to your configuration.
4. Drag and drop one of the gauge controls from the library to your screen.

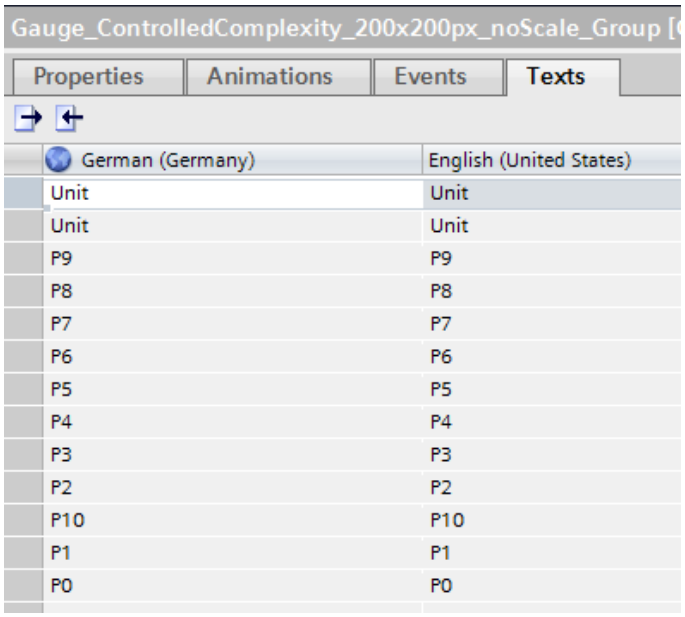
   Figure 23-4



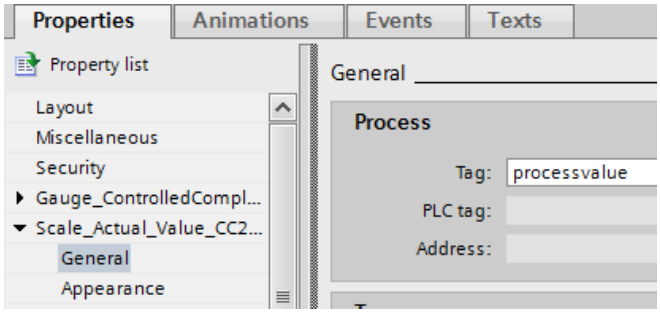
5. Open the properties of the graphic I/O field and select the control tag for display under "General > Process > Tag:".



6. When you use a gauge control with free scaling, you can change the labeling of the unit and the scale in the "Texts" tab.



In addition, gauge controls with free scaling include an I/O field for the actual value. Select the process tag under "Properties > General > Process > Tag:".



24 Increase clarity – Gauge controls for Comfort Panel / WinCC RT Advanced

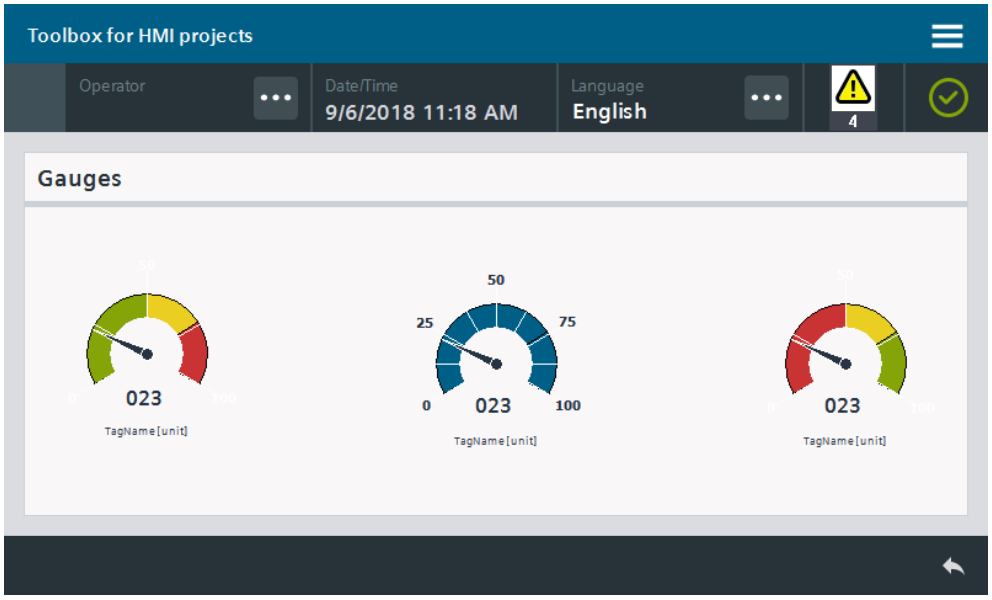
24.1 General description

Many plant operators would like to get an idea of the status and performance of their plant with a mere look at the visualization. There is a variety of integer performance indicators for this:

- Availability
- Power factor
- Quality factor
- Efficiency
- Effectiveness

You can use the "Gauge control" from the "Tools" task card for this purpose. However, the configuration of "gauge controls" is very time-consuming. This is why the library provides a variety of preset gauge controls with the value range 0…100. This will save time during configuration.

Figure 24-1



24.1.1 Hardware and software components

This application example is valid for:

- WinCC Comfort, Advanced V15.1
- SIMATIC Comfort Panels, Comfort PRO Panels, Outdoor Panels, Mobile Panels 2nd Generation
- SIMATIC WinCC RT Advanced V15.1

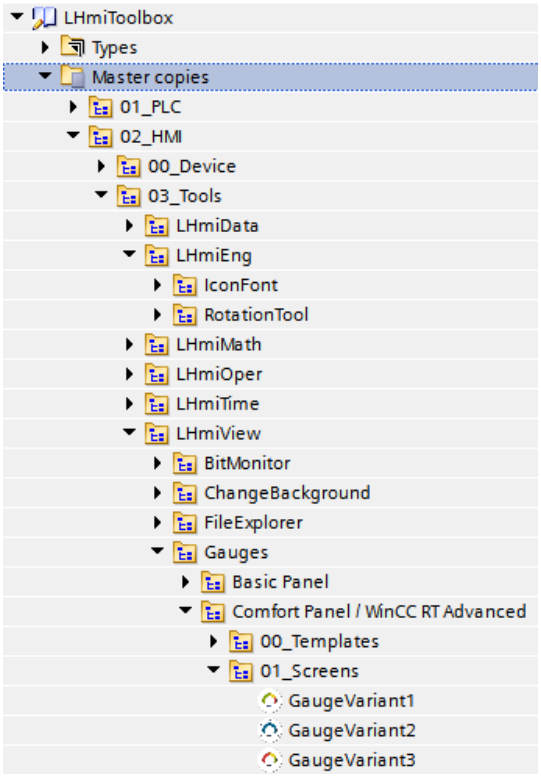
24.2 Integration into the user project

Note Requirement for the integration is that there is already an integer tag for connection to the gauge control in your project.

1. Open your WinCC configuration and the library with the tools (Section 2.3).
2. Open the folder "Master copies > 02_HMI > 03_Tools > LHmiView > Gauges" of the library.
3. Add a new screen to your configuration.

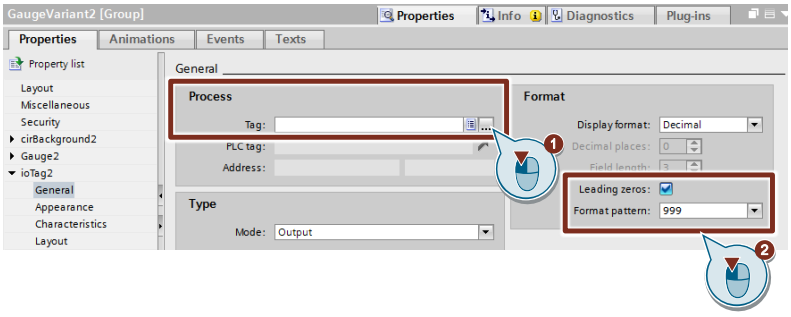
   Drag and drop a gauge control of your choice from the library to your screen.

   Figure 24-2



4. Open the properties of the graphic I/O field and connect a process tag of your choice under "General > Process > Tag:" (1). Adapt the format settings as in Figure 24-3 (2).

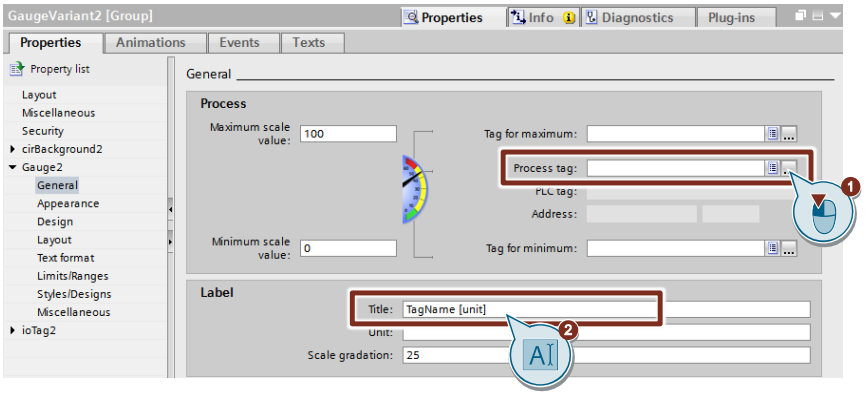
   Figure 24-3



5. Open the properties of the gauge control and connect a process tag from the I/O field under "General > Process > Tag:" (1).

   Adapt the title of the gauge control under "Label" (2).

   Figure 24-4



25 Increase clarity – File Explorer

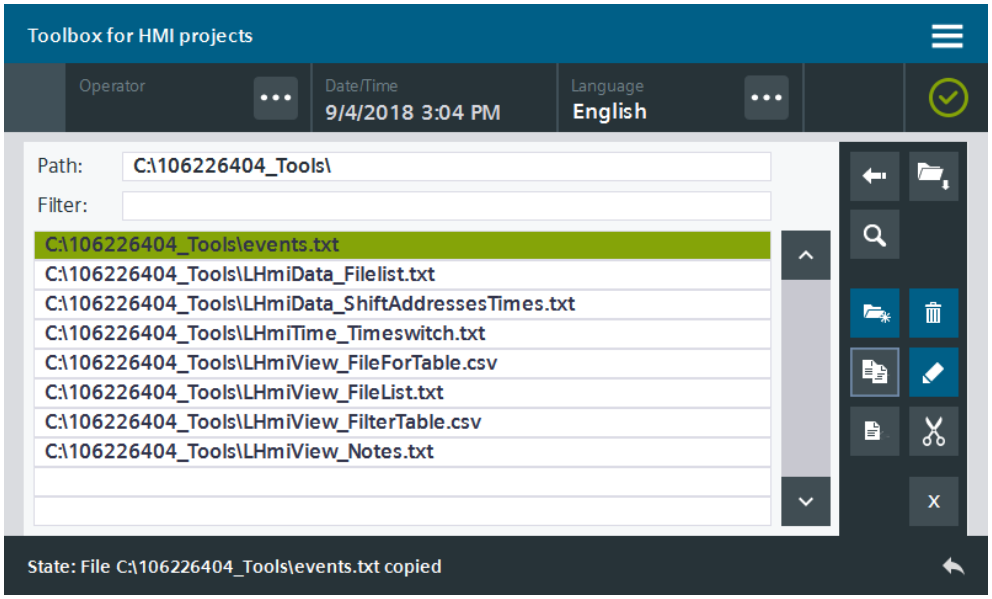
25.1 General description

The default file browser allows you to select any file in the file system of the operator panel and save it in your project as a WinCC tag for further use.

The "File Explorer" tool enables you to use extended file functions such as "Delete", "Rename" or "Search" of files / folders.

The File Explorer is fully integrated into the runtime environment so that the operator does not need to access the operating system.

Figure 25-1



25.1.1 Hardware and software components

This application example is valid for:

- WinCC Comfort / Advanced V15.1
- SIMATIC Comfort Panels, Comfort PRO Panels, Outdoor Panels, Mobile Panels 2nd Generation
- SIMATIC WinCC RT Advanced V15.1

25.1.2 VBS scripts used

This section explains the functions of the scripts used in the tool.

LHmiView_vbsFECreateFolder

The "LHmiView_vbsFECreateFolder" script creates a new folder in the file system.

LHmiView_vbsFEDelete

The "LHmiView_vbsFEDelete" script deletes the selected file/folder from the file system.

LHmiView_vbsFEMove

The "LHmiView_vbsFEMove" script allows copying, cutting and inserting the selected file in the file system. The "sender" transfer parameter defines the mode:

- 1: Copy
- 2: Paste
- 3: Cut

LHmiView_vbsFEPreviousFolder

The "LHmiView_vbsFEPreviousFolder" script opens the higher-level folder of the currently selected folder.

LHmiView_vbsFEReadFilesOfFolder

The "LHmiView_vbsFEReadFilesOfFolder" script reads the files from the specified path and shows them as a table.

LHmiView_vbsFERename

The "LHmiView_vbsFERename" script renames the selected file/folder.

LHmiView_vbsFESearch

The "LHmiView_vbsFESearch" script searches for the specified file / folder in the current path.

LHmiView_vbsFEShowFiles

The "LHmiView_vbsFEShowFiles" script opens the selected folder / file.

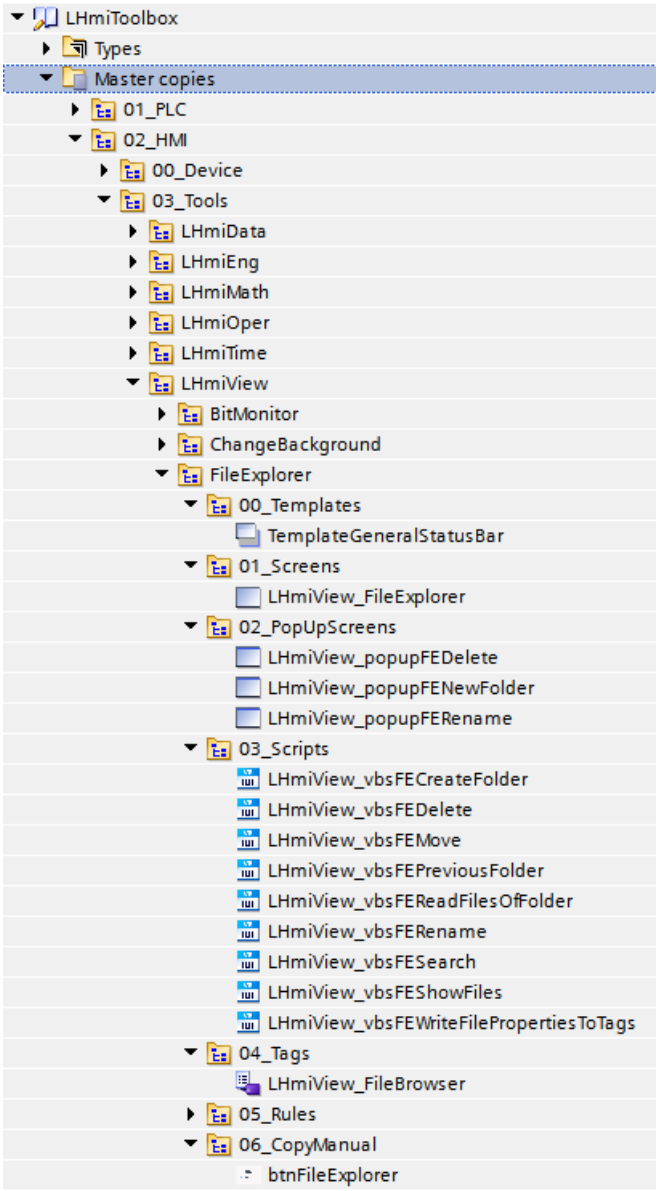
LHmiView_vbsFEWriteFilePropertiesToTags

The "LHmiView_vbsFEWriteFilePropertiesToTags" script writes the properties of the selected folder / file to the associated HMI tags.

25.2 Integration into the user project

1. Open your WinCC configuration and the library with the tools (Section 2.3).
2. Open the folder "Master copies > 02_HMI > 03_Tools > LHmiView > FileExplorer" of the library.
3. Drag the elements (Template, Screens, Scripts, Tag table) to the corresponding folder of the operator panel.

Figure 25-2



Note

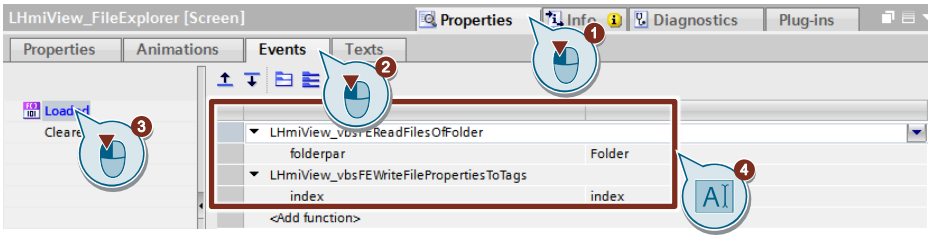
Depending on the size of the HMI operator panel, it may be necessary to adapt the screens.

4. Drag the "btnFileExplorer" button from the library to your screen. You call the File Explorer via this button.
5. Open the properties of the "LHmiView_FileExplorer" screen.

6. Add the scripts "LHmiOper_vbsFEReadFilesOfFolder" and "LHmiOper_vbsFeWriteFilePropertiesToTags" (4) to the "Loaded" event of the screen.

   Select the tags "Folder" and "index" as transfer parameters "folderpar" and "index".

   Figure 25-3



7. Download the visualization to your operator panel or simulate it.

Note

The File Explorer gives the operator access to all files of the operator panel. Therefore, use appropriate operator authorizations to protect the File Explorer.

The File Explorer works on a panel operating system as well as on WinCC RT Advanced.

25.3 Operation

Note

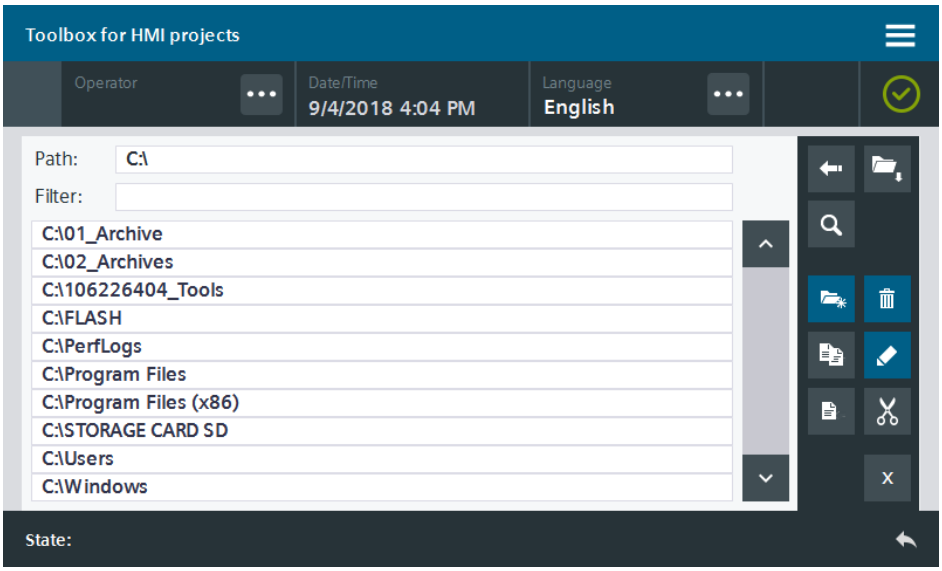
The operation is explained with the help of the example project. When you use the tool in your own configuration, the call may be somewhat different.

The basic functionalities are not affected by this.

1. Open the visualization on your operator panel.
2. Open the Tools overview and click on the "File explorer" button. The screen with the File Explorer opens.

   The default path setting is "\" ("My Computer" – Windows CE) or "C:\" (Computer – Windows).

Figure 25-4

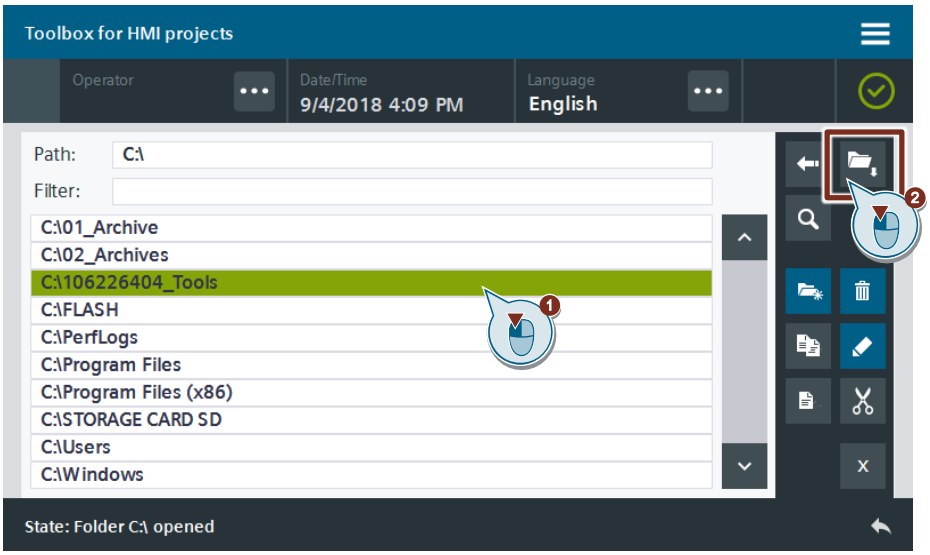


Note

Due to the space requirements on the operator panel, very long path names will not be displayed (approx. 60 or more characters). If you regularly use longer path names, resize the file browser and the I/O fields to suit your requirements.

3. Select a folder (1) and open it with the Open button (2).

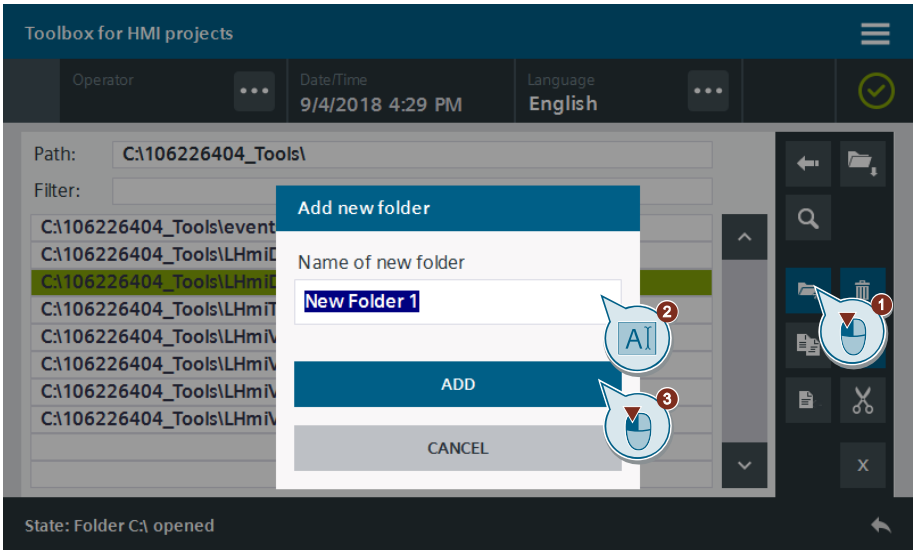
Figure 25-5



4. Create a new folder (1) in the current directory with the New button. The pop-up screen "Add new folder" opens.

   Enter a folder name of your choice (2) and add it with the "ADD" button (3). Close the pop-up screen with the "CANCEL" button without creating a new folder.

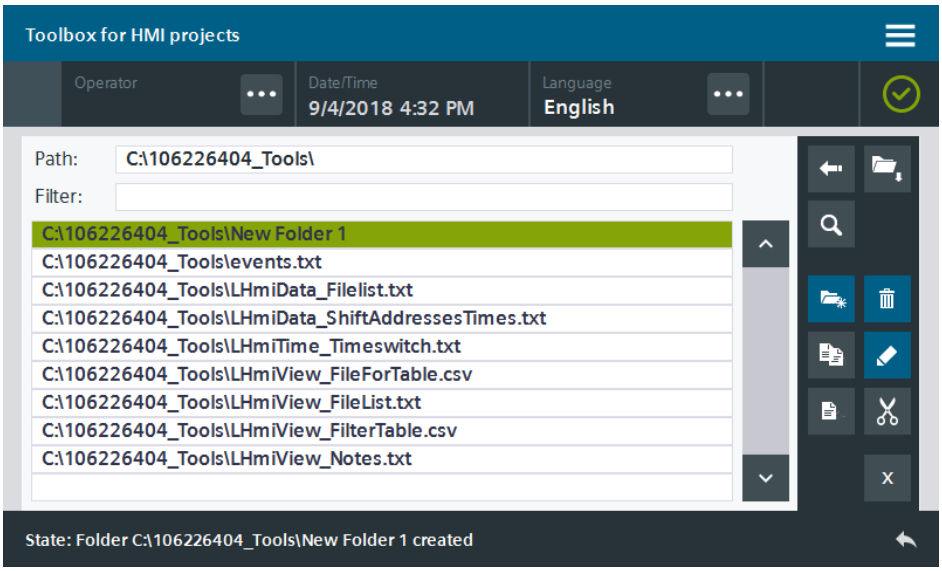
Figure 25-6



Result

A new folder is created and shown in the table.

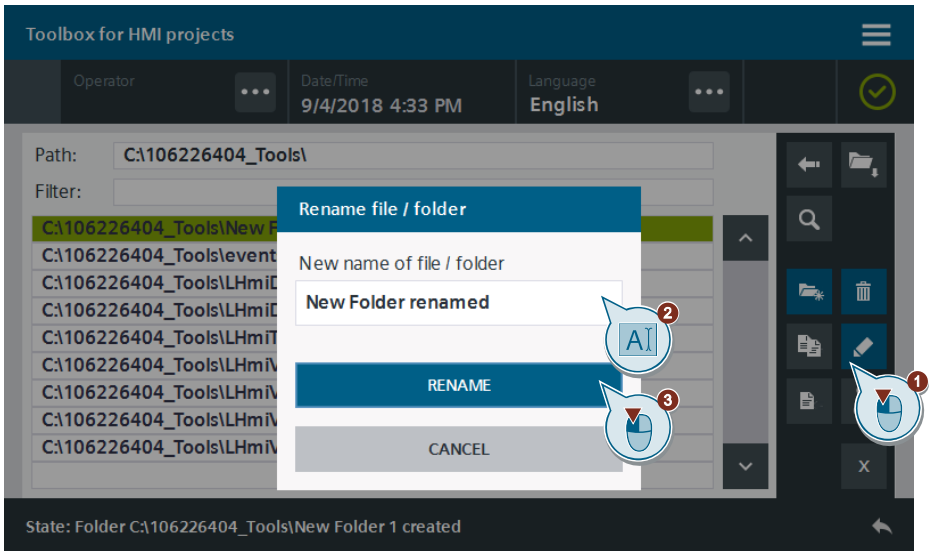
Figure 25-7



5. Select the folder in the table and click the Rename button (2). The pop-up screen "Rename file / folder" opens.

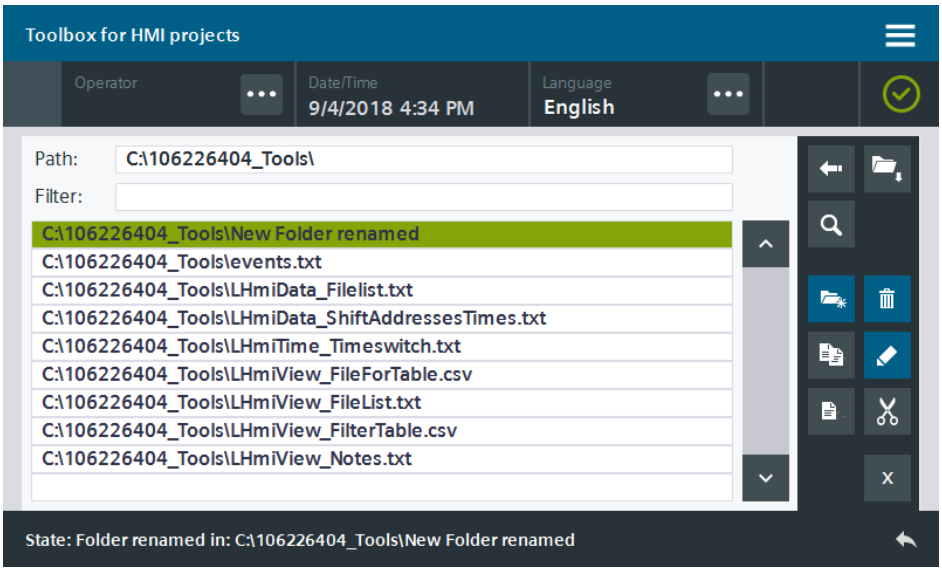
   Enter a new name of your choice (2) and rename the folder with the "RENAME" button (3). Close the pop-up screen with the "CANCEL" button without renaming the file / folder.

   Figure 25-8



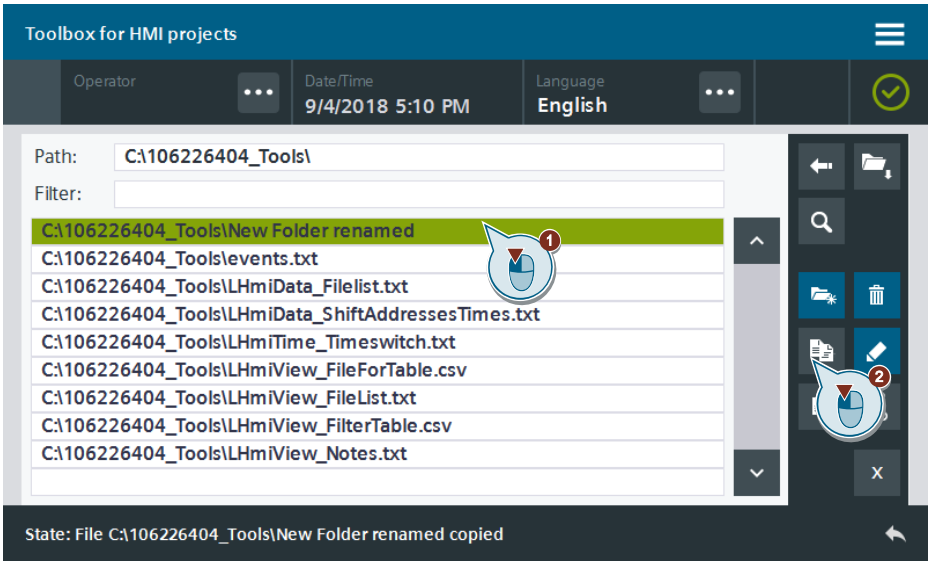
Result
The folder name is changes and is shown in the table.

Figure 25-9



6. Select the folder in the table (1). Use the copy button to copy the folder to the clipboard (2).

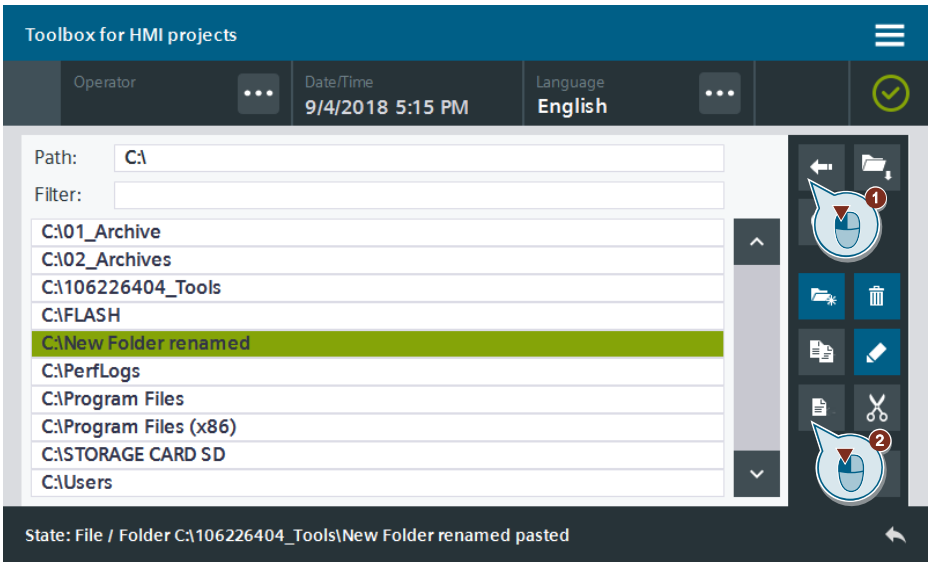
Figure 25-10



7. You use the Back button (1) to move up one folder level. You use the paste button to paste the copy of the folder (2).

Result
The folder is copied to the selected directory.

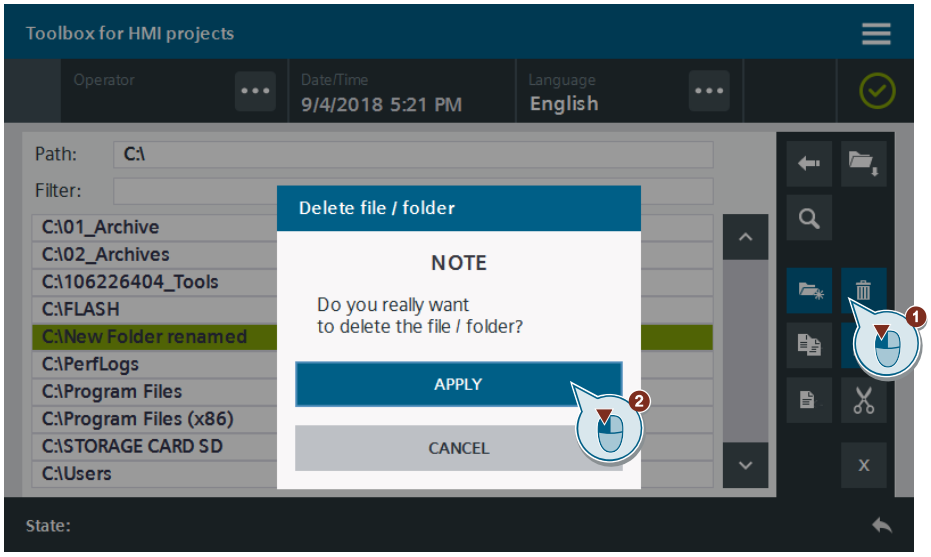
Figure 25-11



8. Select the folder in the table. Use the delete button to delete the folder (1). The pop-up screen "Delete file / folder" opens.

   Confirm the deletion with the "APPLY" button (2). Close the pop-up screen with the "CANCEL" button without deleting the file / folder.

Figure 25-12

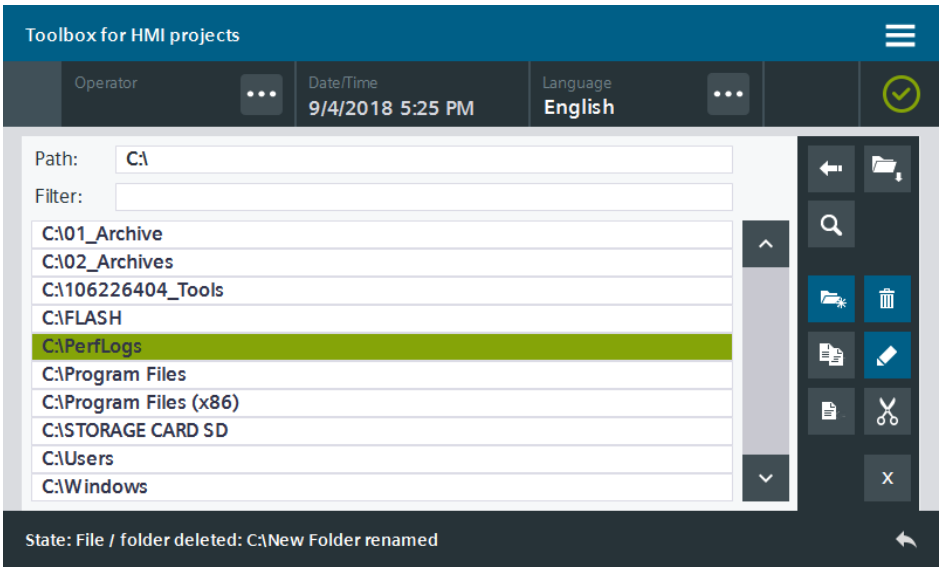


Note

Only folders without content can be deleted. Delete all files in the folder prior to deletion.

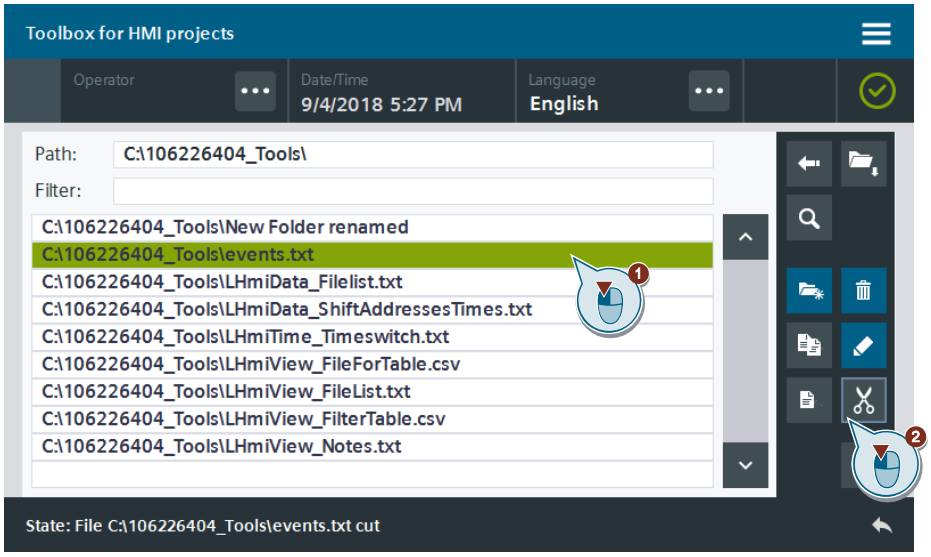
Result: The folder is deleted.

Figure 25-13



9. Navigate to a folder of your choice (1) and select a file that you want to move. Use the cut button (2) to cut the file and copy it to the clipboard.

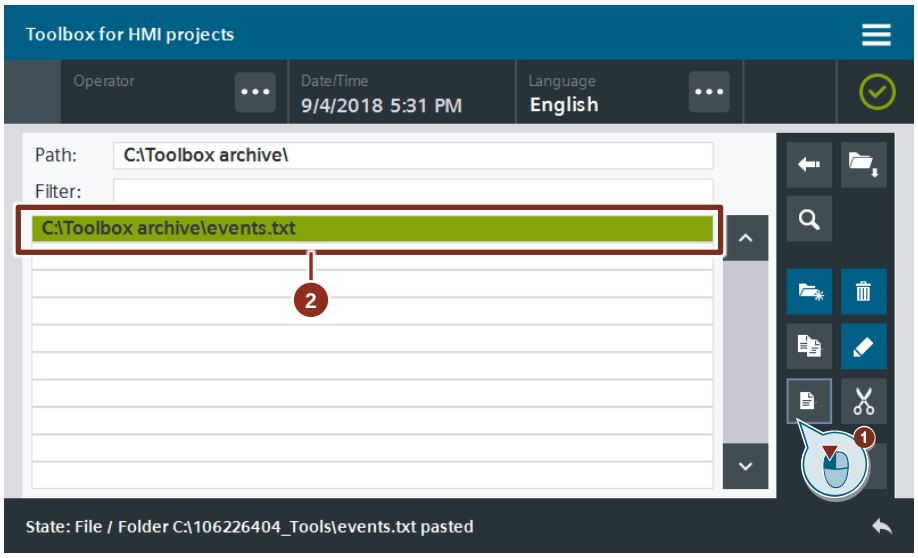
Figure 25-14



10. Navigate to a folder of your choice and press the paste button (1).

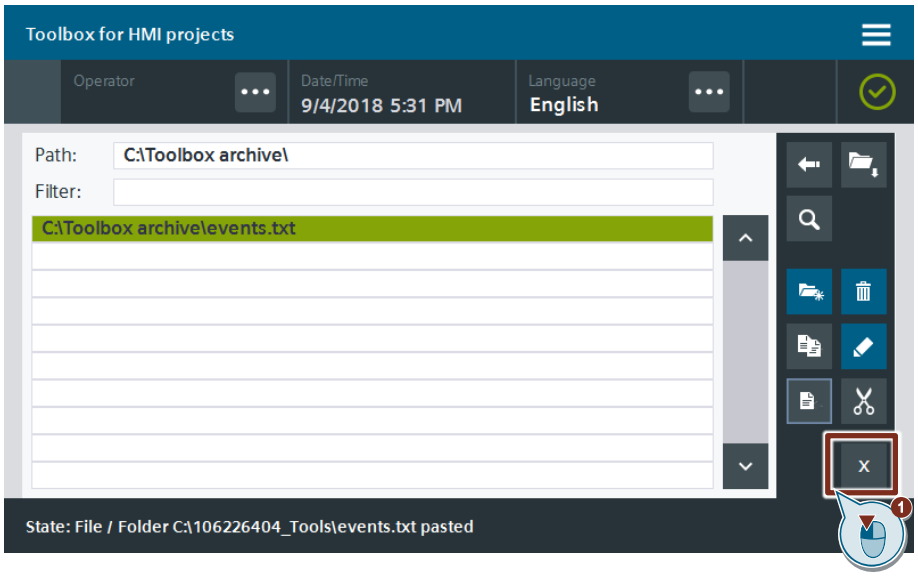
    Result: The file is pasted under the selected folder path (2).

    Figure 25-15



11. Press the "X" button to close the File Explorer.

    Figure 25-16



12. Use the Back button in the status bar to return to the previous screen.

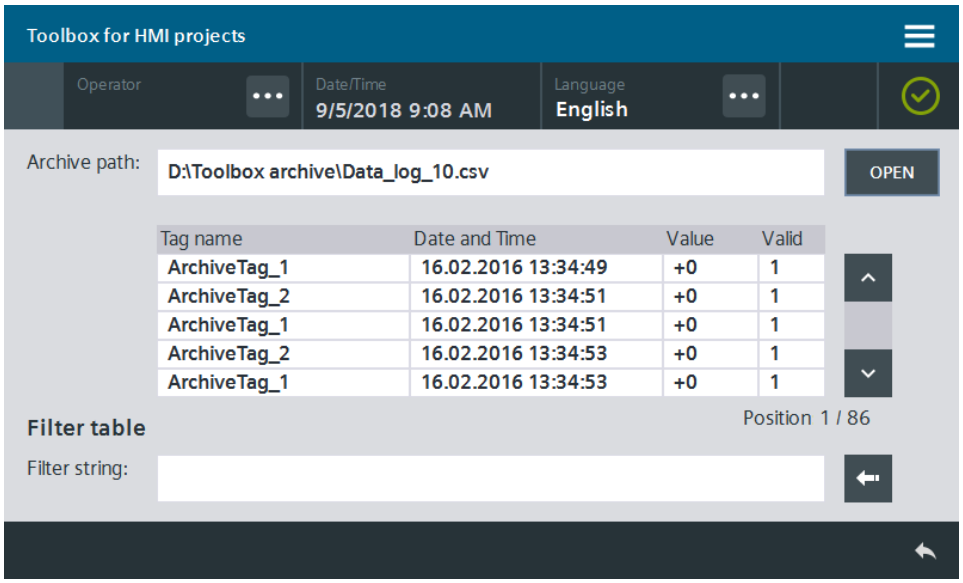
26 Increase clarity – Table view for logs

26.1 General description

Logs allow you to back up tags and alarms during runtime. The alarm view allows you to output the alarm logs, and the trend view allows you to output the tag logs.

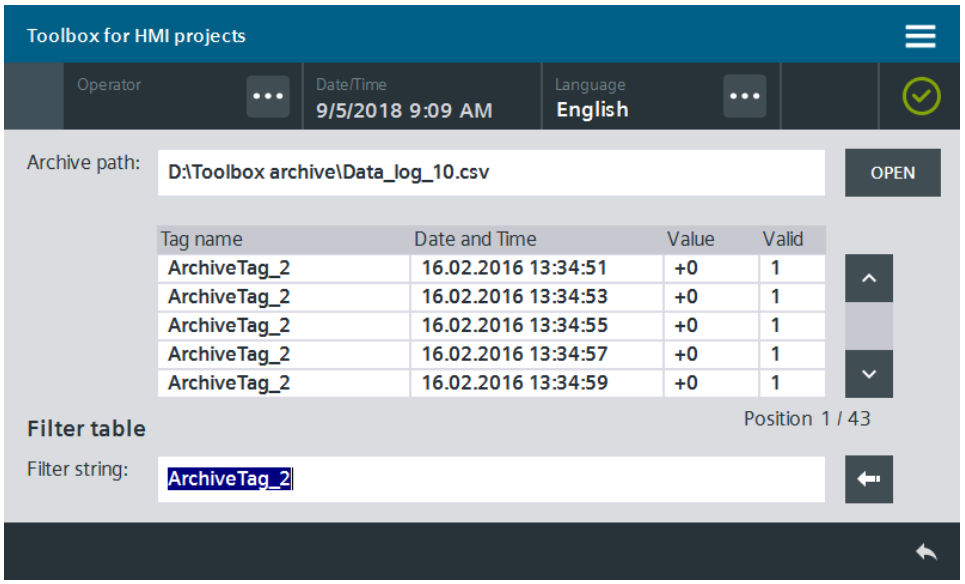
The "Table view" allows you to display tag logs on the HMI operator panel also as tables.

Figure 26-1



Plus the tool lets you filter the tag log using specific criteria.

Figure 26-2



26.1.1 Hardware and software components

This application example is valid for:

- WinCC Comfort / Advanced V15.1
- SIMATIC Comfort Panels, Comfort PRO Panels, Outdoor Panels, Mobile Panels 2nd Generation
- SIMATIC WinCC RT Advanced V15.1

26.1.2 VBS scripts used

This section explains the functions of the scripts used in the tool.

LHmiView_vbsRead ArchiveToHmiTags

The "LHmiView_vbsRead ArchiveToHmiTags" script reads the entries of the read tag log, writes the information to HMI tags and displays them in a table.

LHmiView_vbsFormatArchiveFile

The "LHmiView_vbsFormatArchiveFile" script sorts the entries of the read tag log.

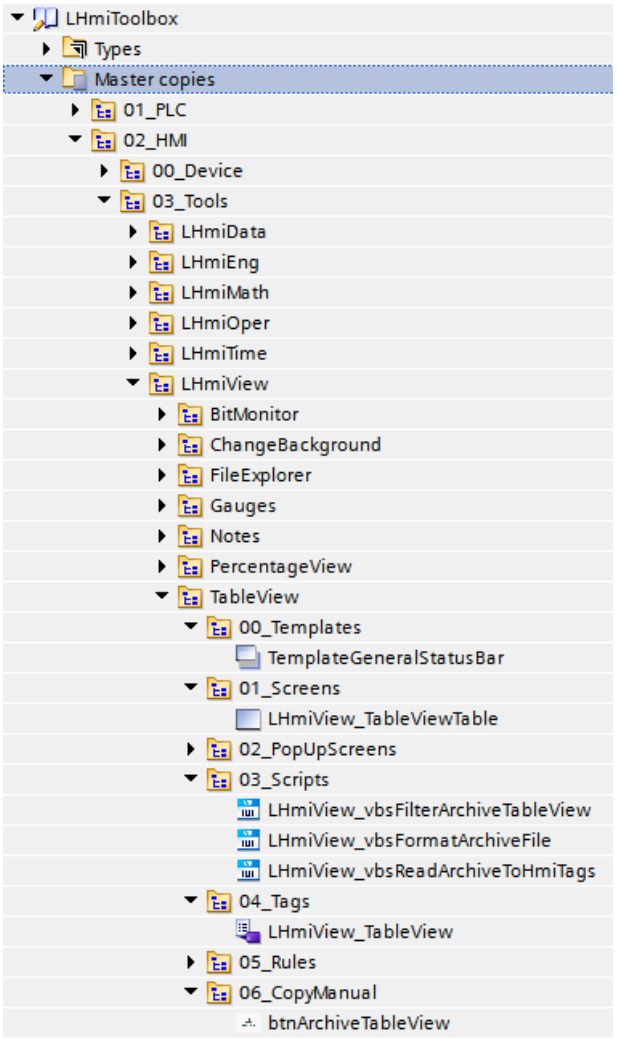
LHmiView_vbsFilterArchiveTableView

The "LHmiView_vbsRead ArchiveToHmiTags" script filters the entries of the read tag log by the specified filter criterion, writes the information to HMI tags and displays them in a table.

26.2 Integration into the user project

1. Open your WinCC configuration and the library with the tools (Section 2.3).
2. Open the folder "Master copies > 02_HMI > 03_Tools > LHmiView > TableView" of the library.
3. Drag the elements (Template, Screen, Scripts, Tag table) to the corresponding folder of the operator panel.

Figure 26-3



Note

Depending on the size of the HMI operator panel, it may be necessary to adapt the screens.

4. Drag the "btnArchiveTableView" button from the library to a screen of your choice. You open the tool with this button.
5. Download the visualization to your operator panel or simulate it.

26.3 Operation

Note

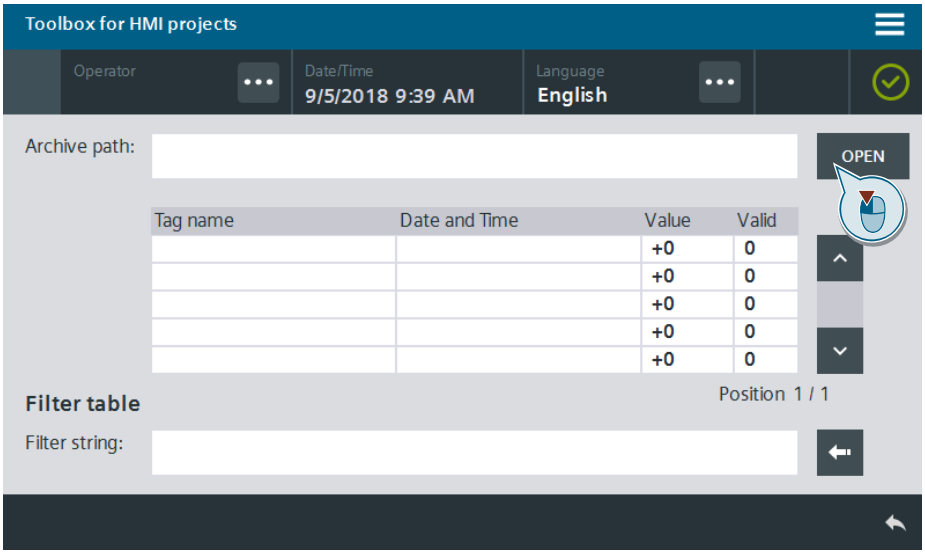
The operation is explained with the help of the example project. When you use the tool in your own configuration, the call may be somewhat different.

The basic functionalities are not affected by this.

You need a log file for testing.

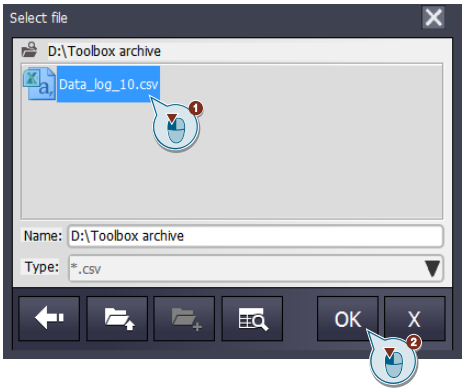
1. Open the visualization on your operator panel.
2. Open the Tools overview and click on the "Table view" button. The screen with the tool opens.
3. Open the File Explorer with the "OPEN" button.
   The File Explorer opens.

   Figure 26-4



4. Select a log file of your choice that you want to display (1).
   Confirm the selection with "OK" (2). The log is displayed as a table.

   Figure 26-5

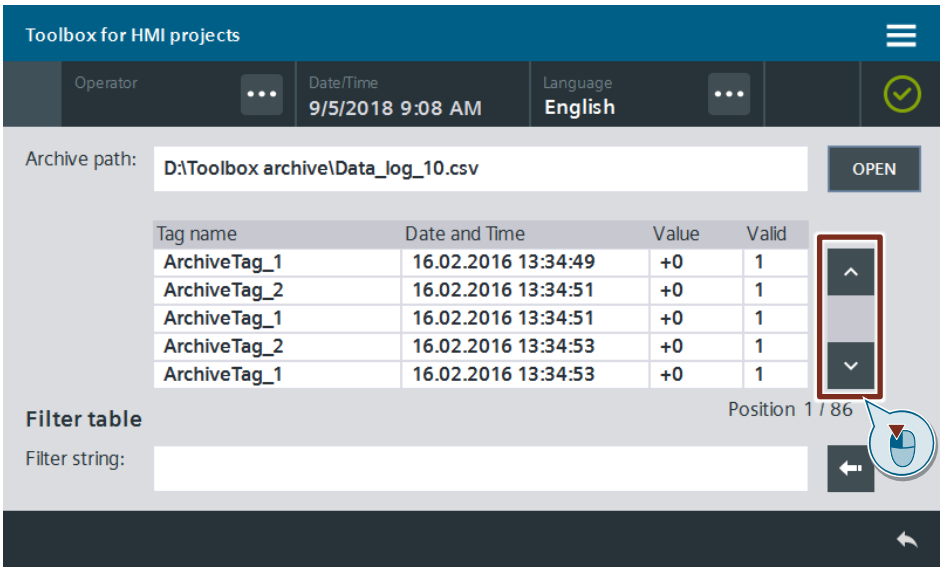


Note

Depending on the hardware used, the call of large logs may take some time.

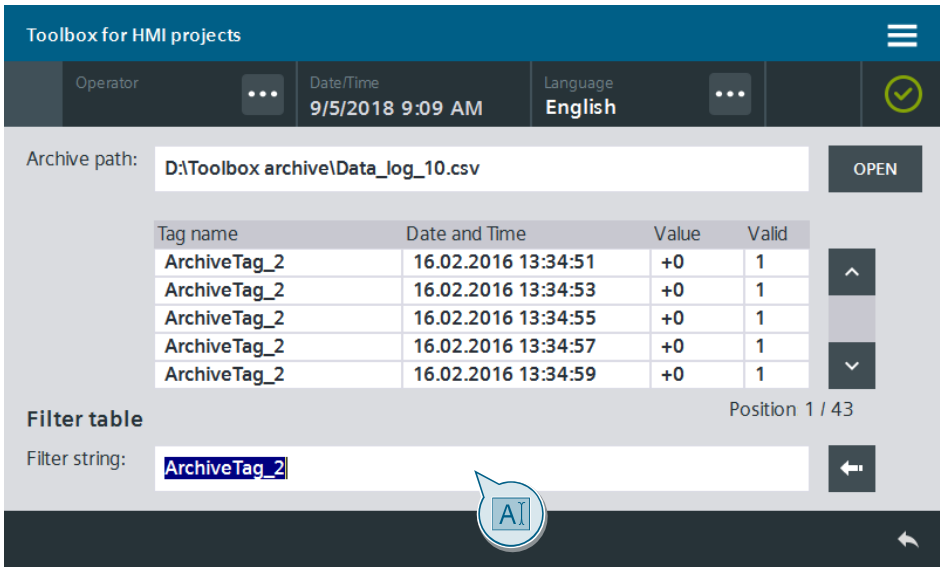
5. You scroll through the table entries with the scroll bar on the right next to the table. Scrolling is per page (5 entries per page).

Figure 26-6



6. Enter a filter text for the tag name in the I/O field and confirm the entry with the RETURN button of the on-screen keyboard.
The table now only shows entries that match the filter text completely.

Figure 26-7



Note

Please note that the input is case-sensitive.

7. Press the Back button to delete the filter text.
The table now shows the entire log again.

27 Increase clarity – Changing the background when calling pop-up screens

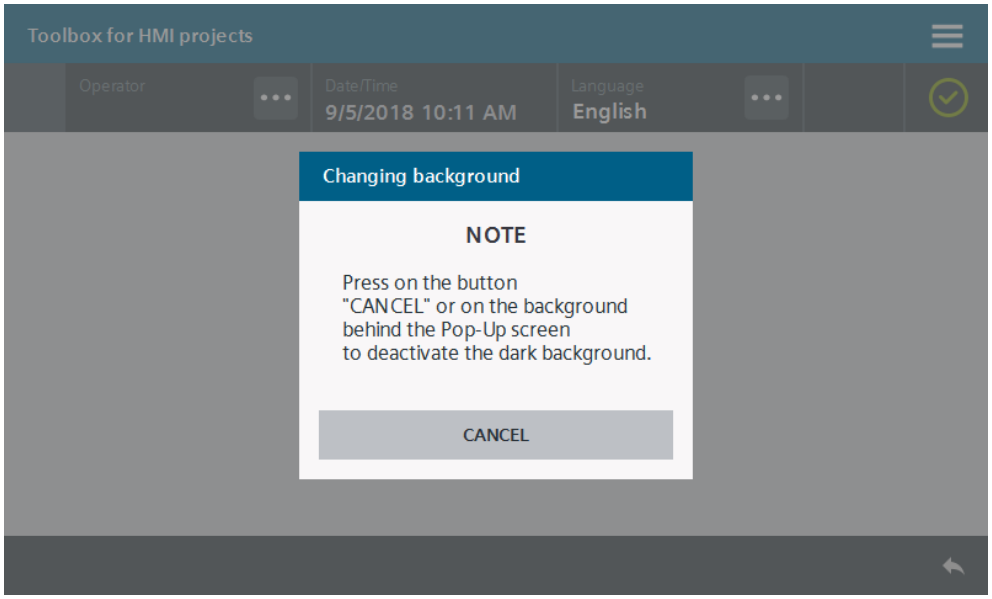
27.1 General description

The options for using pop-up screens are multifold. They are frequently used for input of specific machine parameters or as query / acknowledgment dialog.

It is therefore important to shift the focus of the operator to the pop-up screen (by making the background darker or brighter) and limit an operation of screen objects in the background of the pop-up screen.

To accomplish this goal, the tool uses a button with a graphic that is partially transparent which is added to the screen. After activation of the pop-up screen, the graphic is made visible by means of an HMI tag. The graphic is hidden once again after deactivating the pop-up screen.

Figure 27-1



27.1.1 Hardware and software components

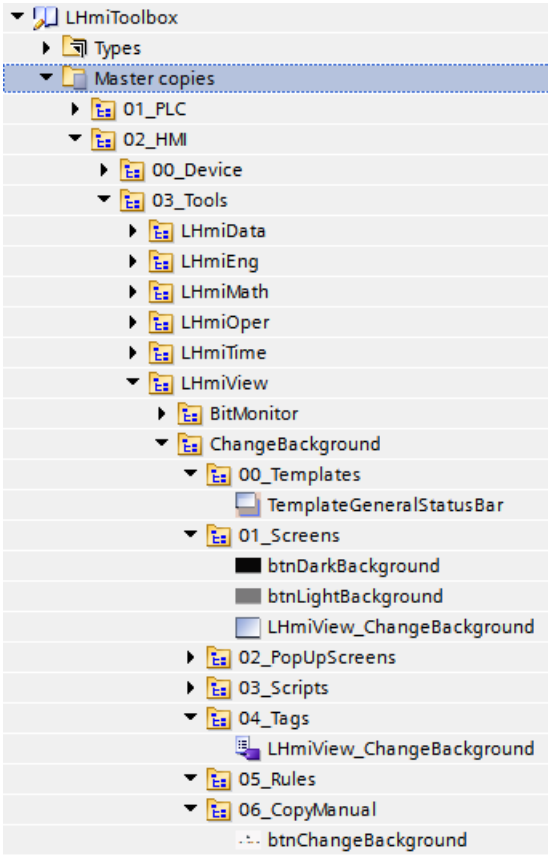
This application example is valid for:

- SIMATIC WinCC Comfort / Advanced V15.1
- SIMATIC Comfort Panels, Comfort PRO Panels, Outdoor Panels, Mobile Panels 2nd Generation
- SIMATIC WinCC RT Advanced V15.1

27.2 Integration into the user project

1. Open your WinCC configuration and the library with the tools (Section 2.3).
2. Open the folder "Master copies > 02_HMI > 03_Tools > LHmiView > ChangeBackground" of the library.
3. Drag the elements (Tag table) to the corresponding folder of the operator panel.

Figure 27-2



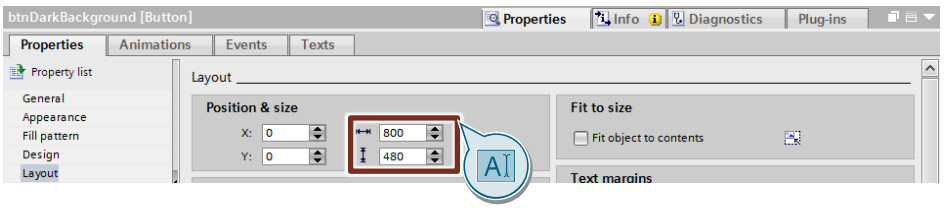
Note
The library also contains the template "TemplateGeneralStatusBar", the screen "LHmiView_ChangeBackground", the pop-up screen "LHmiView_popupChangeBackground" as well as the "btnChangeBackground" button for calling the screen.

They are needed for the example project and are not part of the tool.

4. Open the screen by changing the background when calling a pop-up screen and limiting the operability of the screen objects.
5. Drag and drop one of the buttons with partially transparent graphic from the library to your screen.
   - Dark background – "btnDarkBackground"
   - Light background – "btnLightBackground"

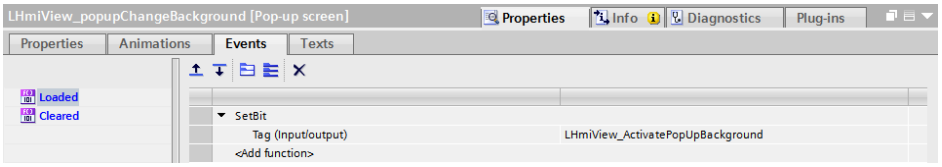
6. Select the button and open the associated properties for the layout. Adjust the width and height to the overall size of your screen.

   Figure 27-3



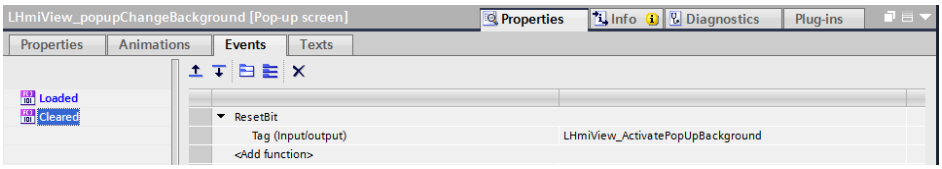
7. Open your pop-up screen.
8. Open the results of your pop-up screen.
9. Add the system function "SetBit" to the "Loaded" event. For the transfer parameter "Tag (Input/output)", select the tag for visibility "LHmiView_ActivatePopUpBackground".

   Figure 27-4



10. Add the system function "ResetBit" to the "Cleared" event. For the transfer parameter "Tag (Input/output)", select the tag for visibility "LHmiView_ActivatePopUpBackground".

    Figure 27-5



11. Download the visualization to your operator panel or simulate it.

27.3 Operation

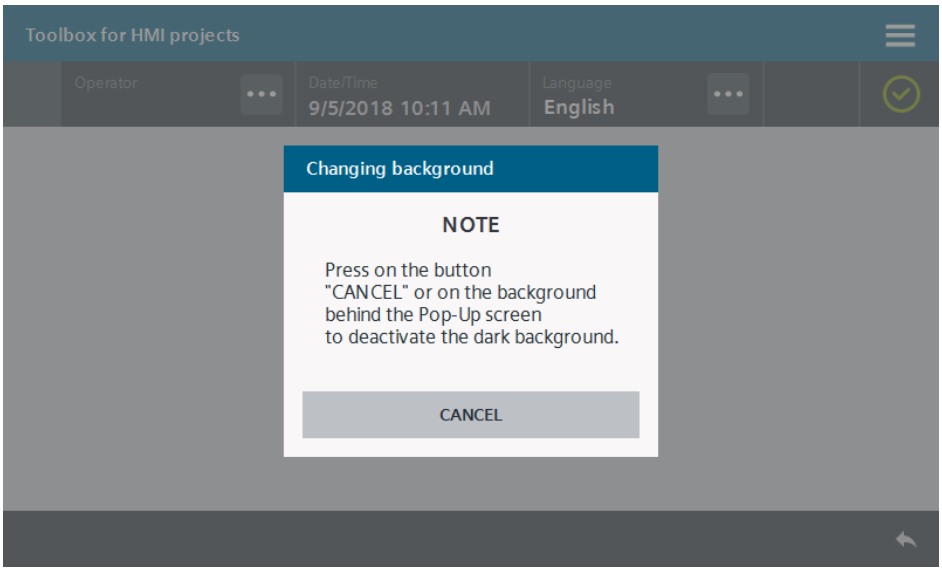
Note

The operation is explained with the help of the example project. When you use the tool in your own configuration, the call may be somewhat different.

The basic functionalities are not affected by this.

1. Open the visualization on your operator panel.
2. Open the Tools overview and click on the "Change Background" button.
3. Press the "Open Pop-up screen" button. The background turns dark and the "Changing Background" pop-up screen opens.

Figure 27-6



4. Close the pop-up screen with the "CANCEL" button. The screen turns bright again.

28 Increase clarity – Waiting view

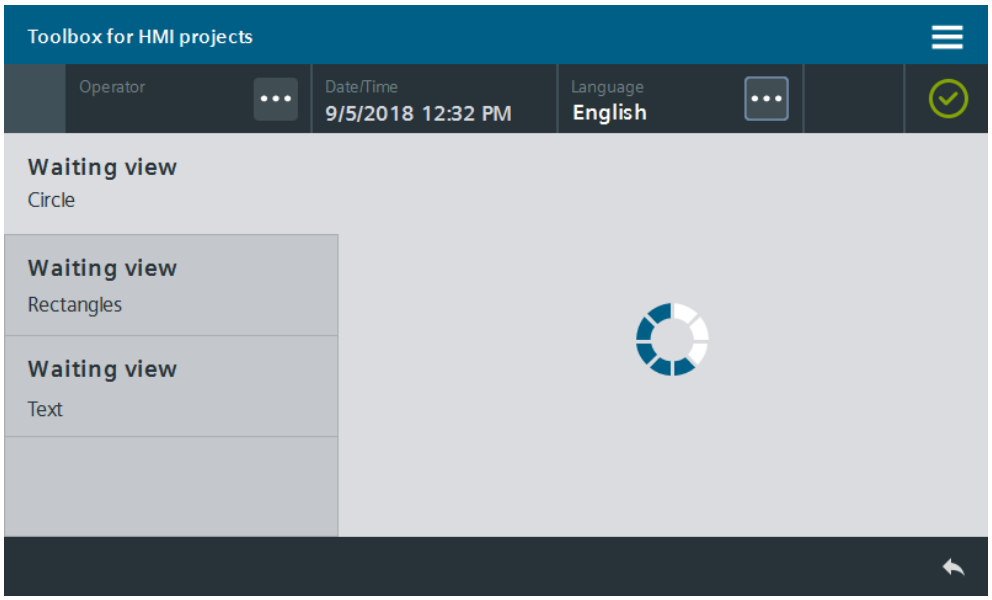
28.1 General description

The waiting view allows you to inform the operator when a function (e.g. script execution) still needs time. This also prevents operator errors.

Three versions of the waiting view are available.

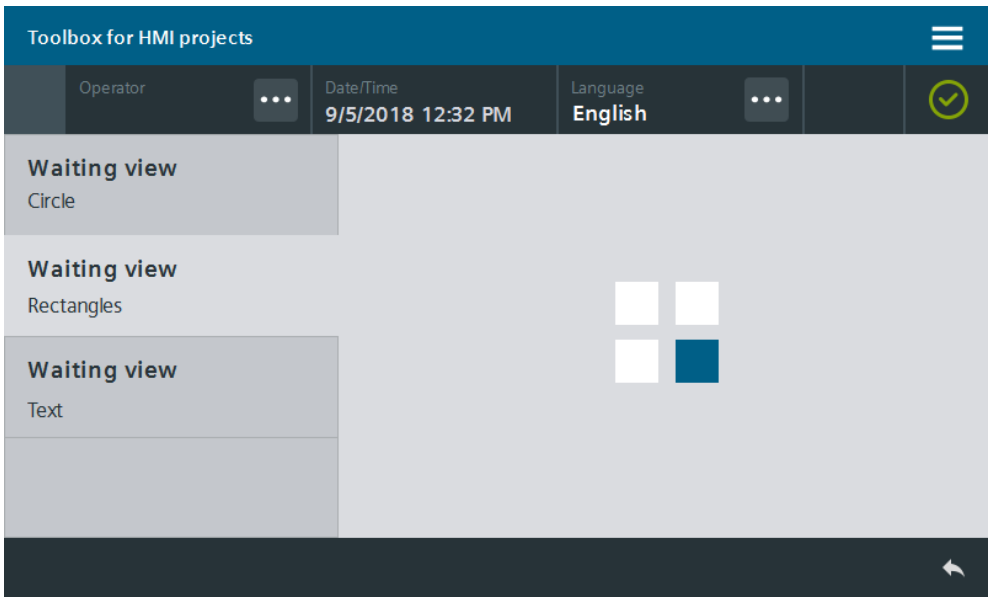
Circle – Graphic I/O field with "gfxioWaitingViewCircle" graphics list

Figure 28-1



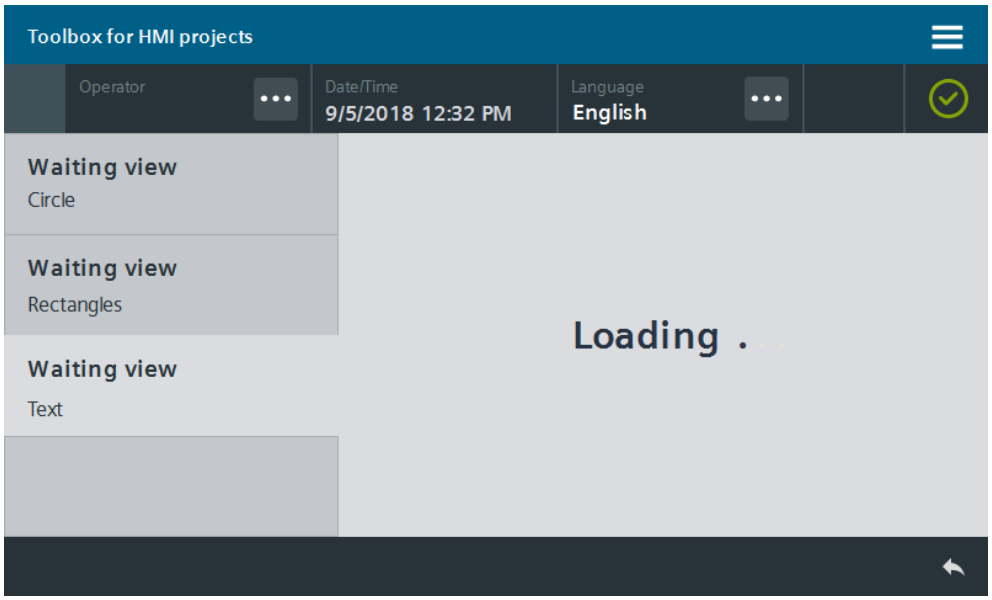
Rectangles – "WaitingViewRectangles" screen object group

Figure 28-2



Writing – "WaitingViewText" screen object group

Figure 28-3



28.1.1 Hardware and software components

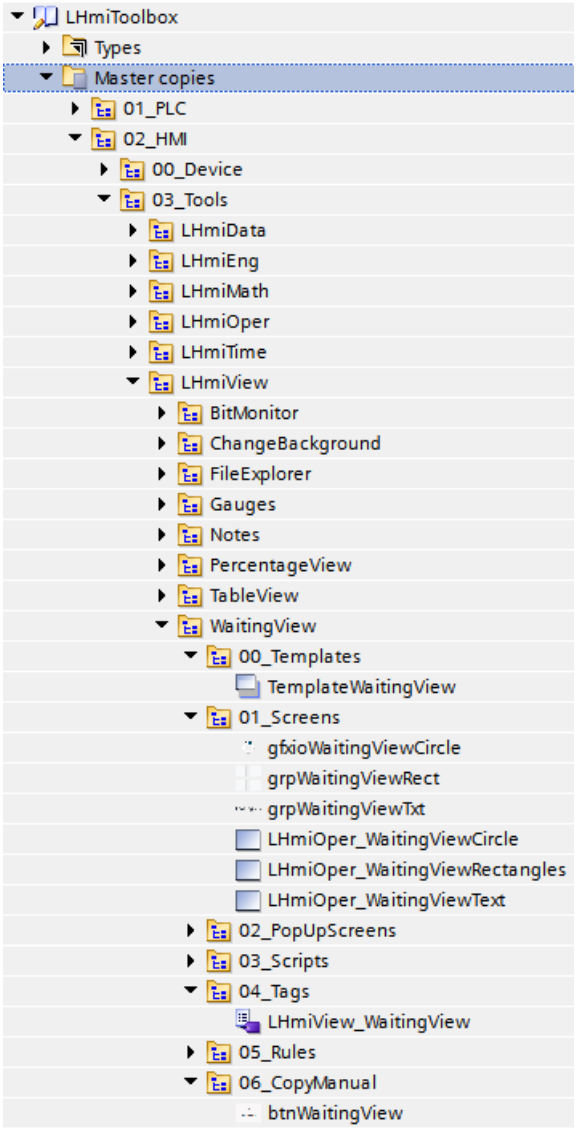
This application example is valid for:

- SIMATIC WinCC Comfort / Advanced V15.1
- SIMATIC Comfort Panels, Comfort PRO Panels, Outdoor Panels, Mobile Panels 2nd Generation
- SIMATIC WinCC RT Advanced V15.1

28.2 Integration into the user project

1. Open your WinCC configuration and the library with the tools (Section 2.3).
2. Open the folder "Master copies > 02_HMI > 03_Tools > LHmiView > WaitingView" of the library.
3. **Drag the tag table to the corresponding folder of the operator panel.**

Figure 28-4



Note
The library also contains the template "TemplateWaitingView", the screens "LHmiView_WaitingViewCircle", "LHmiView_WaitingViewRectangles", "LHmiView_WaitingViewText" as well as the "btnWaitingView" button for calling the "LHmiView_WaitingViewCircle" screen.

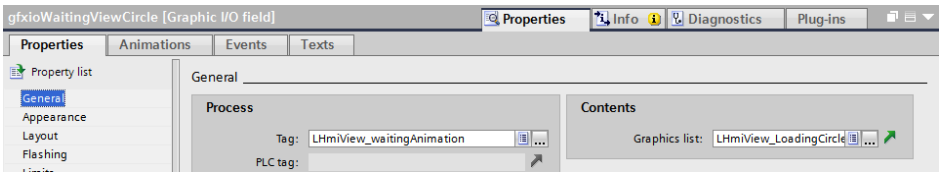
They are needed for the example project and are not part of the tool.

4. Open a screen of your choice. Drag and drop a waiting view of your choice from the library to your screen.
5. **Only when using the "LHmiView_waitingAnimation" waiting view**

   Open the general properties of the "gfxioWaitingViewCircle" graphic view.

Add the tag "LHmiView_waitingAnimation" as process value for simulation of the graphics list.

Figure 28-5



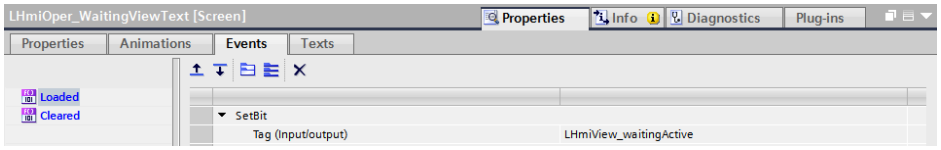
Note

Step 5 is not necessary for the other versions.

6. Open the events of your screen.
7. Add the system function "SetBit" to the "Loaded" event.

   Select the tag "LHmiView_WaitingActive" as transfer parameter. It controls the visibility of the waiting view. The waiting view will be visible after setting up the screen.

   Figure 28-6



Note

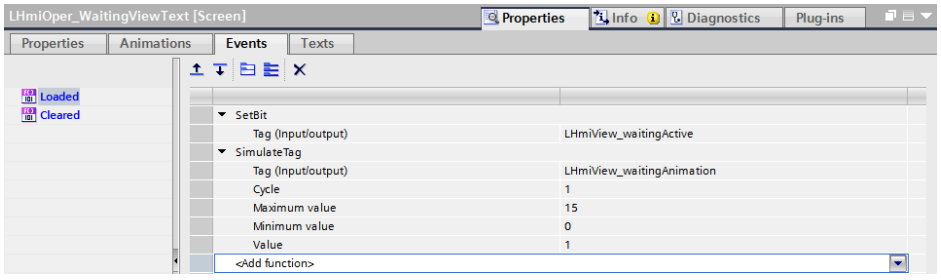
Use the tag "LHmiView_WaitingActive" to make the waiting view visible and invisible.

- 1: visible
- 0: invisible

8. Add the system function "SimulateTag" to the "Loaded" event with the parameters from Figure 28-7.

   Select the tag "LHmiView_waitingAnimation" as transfer parameter. The animation of the waiting view is controlled with the value (value range 1-15) of the tag.

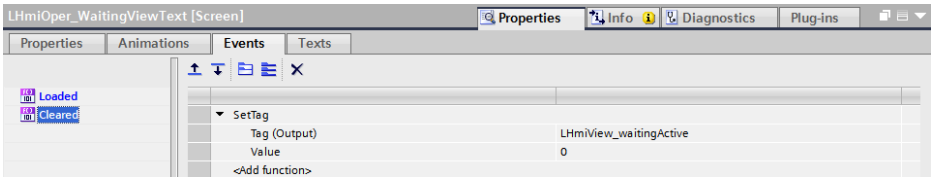
   Figure 28-7



9. Add the system function "ResetBit" to the "Cleared" event.

   Select the tag for visibility "LHmiView_WaitingActive" for the transfer parameter. The waiting view will be invisible after taking down the screen.

   Figure 28-8



10. Download the visualization to your operator panel or simulate it.

28.3 Operation

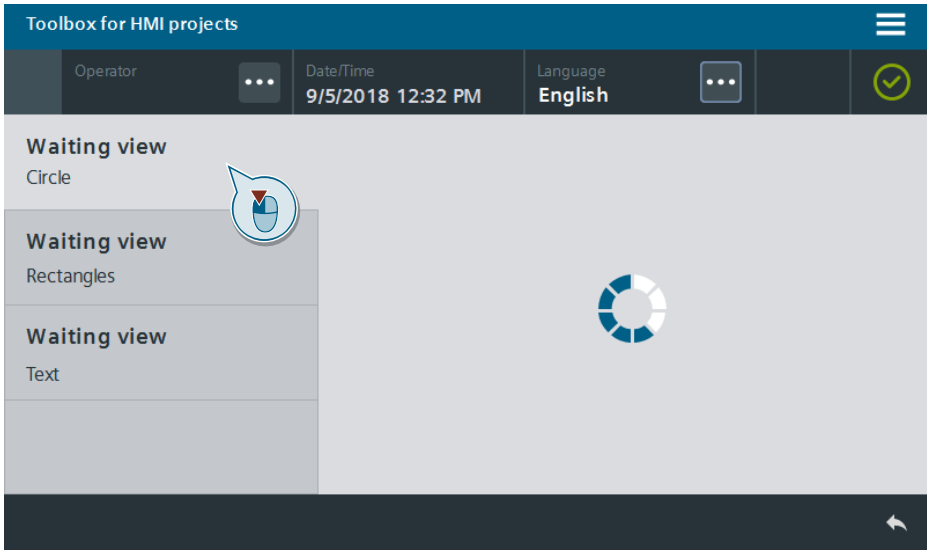
Note

The operation is explained with the help of the example project. When you use the tool in your own configuration, the call may be somewhat different.

The basic functionalities are not affected by this.

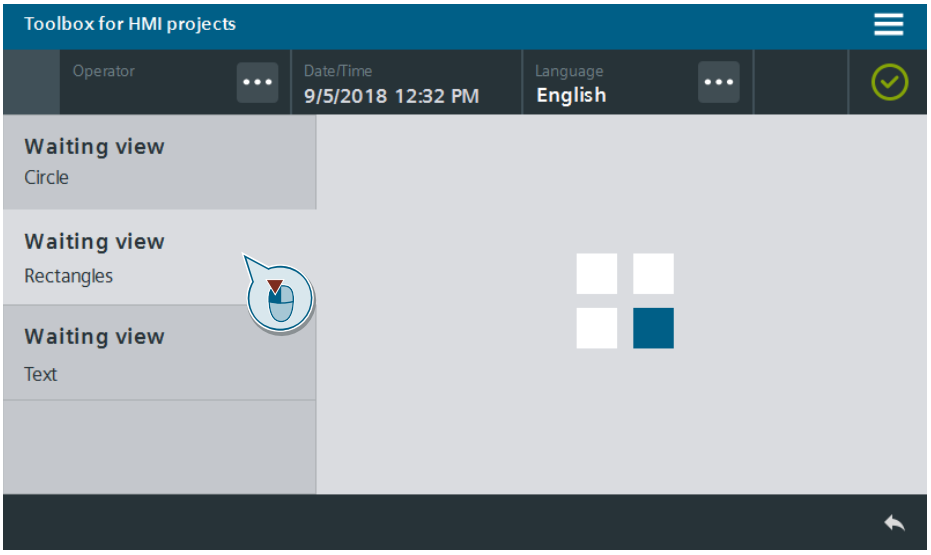
1. Open the visualization on your operator panel.
2. Open the Tools overview and click on the "Waiting view" button. The screen with the "Circle" waiting view opens. The circle is filled and emptied in clockwise direction.

   Figure 28-9



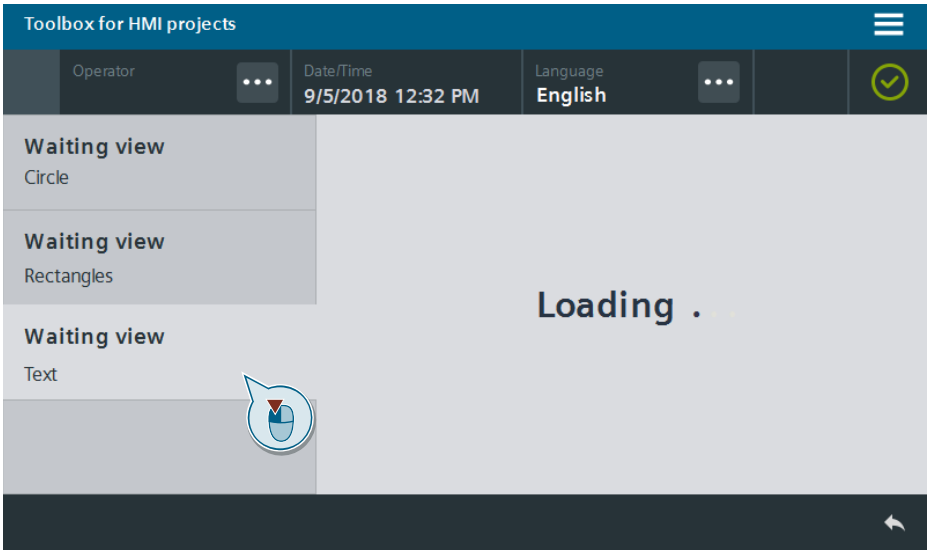
3. Open the screen with the "Rectangles" waiting view using the "Waiting view – Rectangles" button in the page navigation on the left. The blue rectangles are filled in clockwise direction.

   Figure 28-10



4. Open the screen with the "Text" waiting view using the "Waiting view – Text" button in the page navigation on the left. The three loading dots are visible one after the other.

Figure 28-11



29 Increase clarity – Percentage view

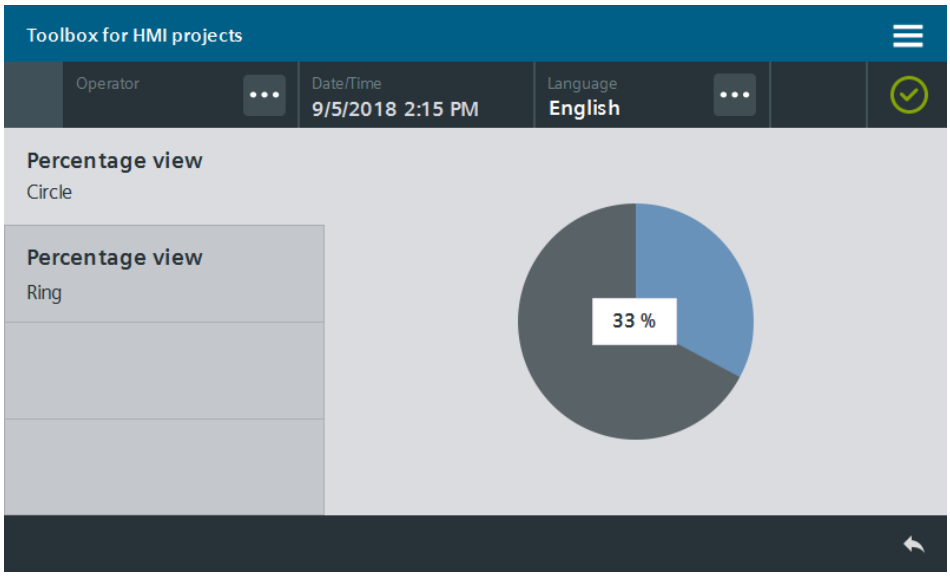
29.1 General description

The percentage view allows you to show integer percentage values (0% to 100%). Use this feature to present the plant operator with a clearly organized overview, for example, of progress in production, KPIs or fill levels.

You can use the two versions (circle or ring) of the percentage view. The percentage views are available as the faceplates through the library for integration into your project. The individual parameter setting is done through the interfaces of the faceplates.

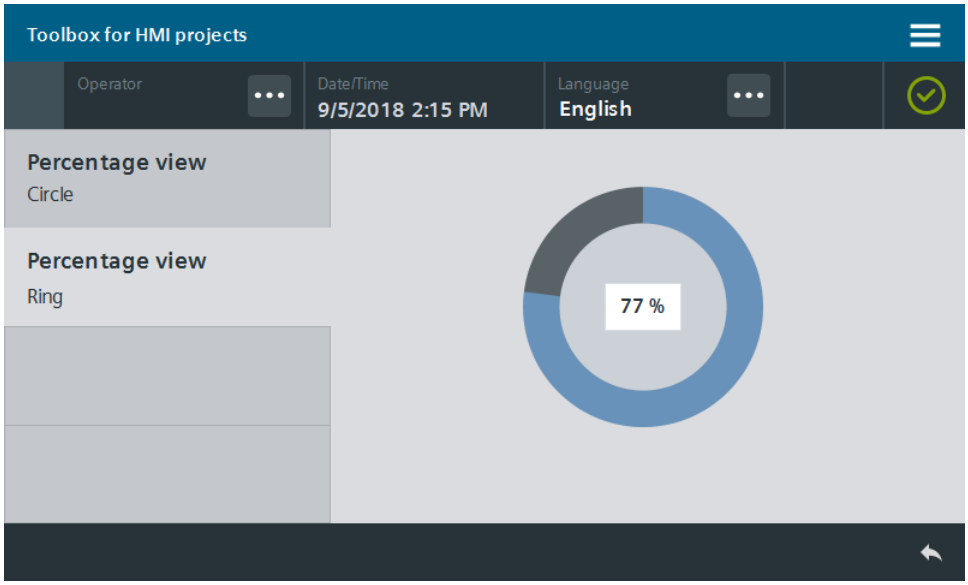
Circle – "LHmiView_fpCirclePercentageView"

Figure 29-1



Ring – "LHmiView_fpRingPercentageView"

Figure 29-2



29.1.1 Hardware and software components

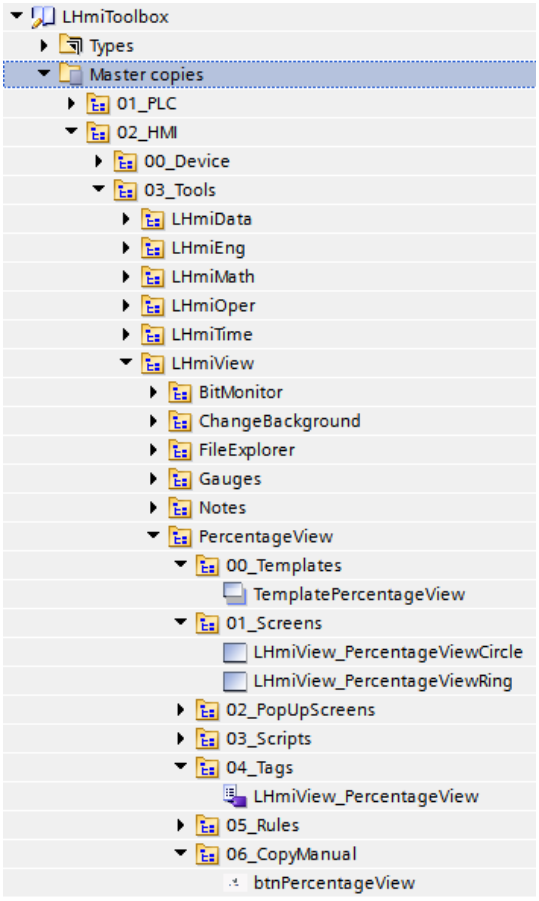
This application example is valid for:

- SIMATIC WinCC Comfort / Advanced V15.1
- SIMATIC Comfort Panels, Comfort PRO Panels, Outdoor Panels, Mobile Panels 2nd Generation
- SIMATIC WinCC RT Advanced V15.1

29.2 Integration into the user project

1. Open your WinCC configuration and the library with the tools (Section 2.3).
2. Open the folder "Master copies > 02_HMI > 03_Tools > LHmiView > PercentageView" of the library.
3. **Drag the tag table to the corresponding folder of the operator panel.**

Figure 29-3



Note

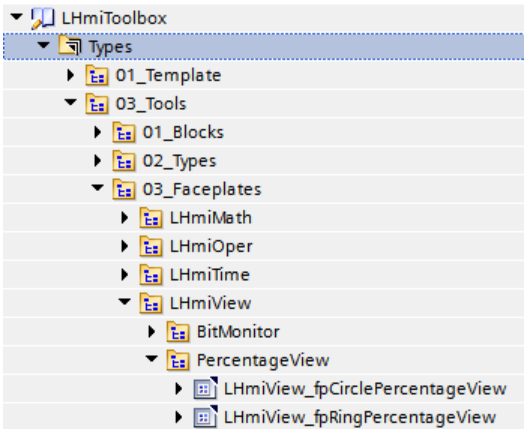
The library also contains the template "TemplatePercentageView", the screens "LHmiView_PercentageViewCircle", "LHmiView_PercentageViewRing" as well as the "btnPercentageView" button for calling the "LHmiView_PercentageViewCircle" screen.

They are needed for the example project and are not part of the tool.

In the application example the tag "LHmiView_percentage" is simulated with the system function "Simulate tag" from 0 to 100. The value changes every second by 1. The system function is connected to the call of the screens.

4. Open the folder "Types > 03_Tools > 03_Faceplates > LHmiView> PercentageView" of the library.

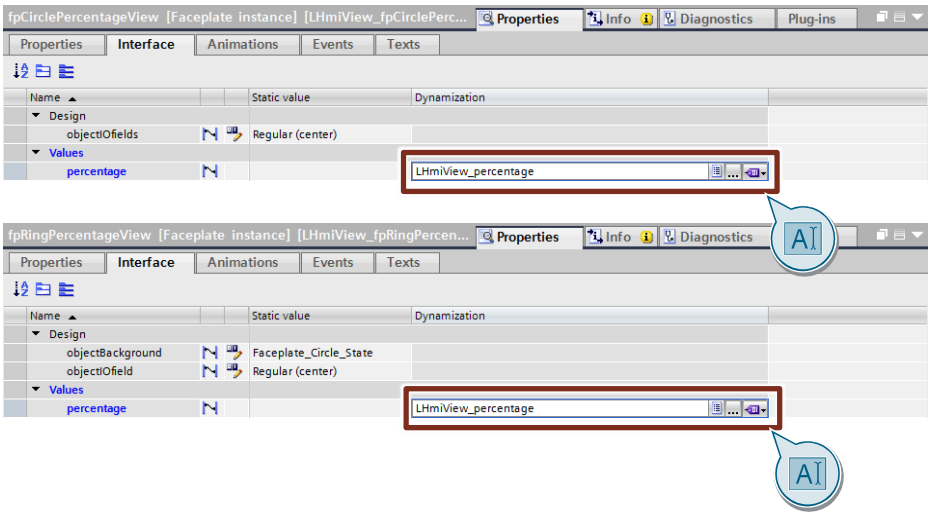
   Figure 29-4



5. Open a screen and copy the desired faceplate to your screen with drag and drop. The faceplate is automatically copied to your project library.
6. Select the faceplate and open the interface of the faceplate under "Properties > Interface".

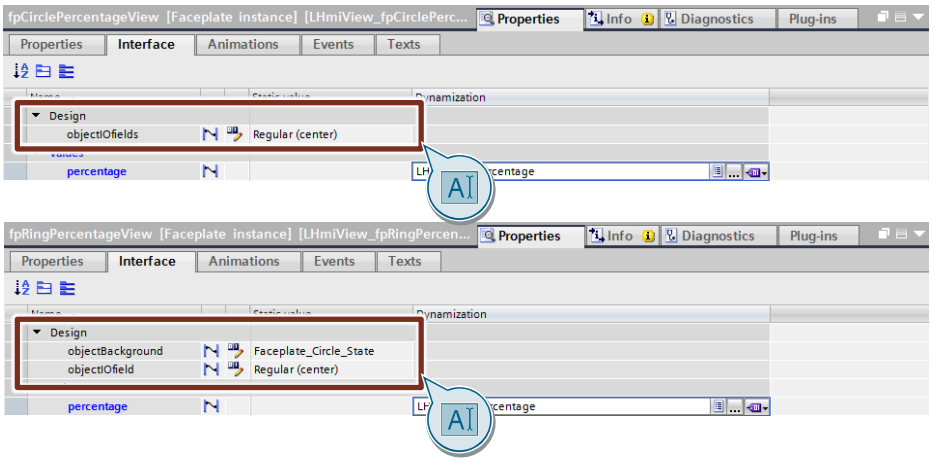
   Connect your tag for the percentage value (data type: INT) to the properties of the "Values" category.

   Figure 29-5



7. **Optional**
   In the properties of the "Design" category, specify the style of the I/O field and of the background (only for percentage view "Ring").

   Figure 29-6



8. Download the software to your operator panel or start the simulation.

29.3 Operation

Note

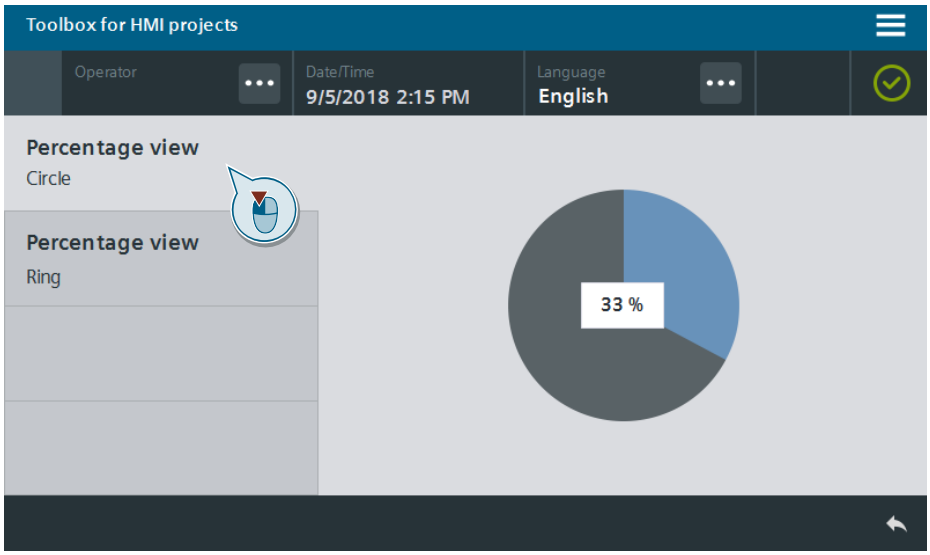
The operation is explained with the help of the example project. When you use the tool in your own configuration, the call may be somewhat different.

The basic functionalities are not affected by this.

1. Open the visualization on your operator panel.
2. Open the Tools overview and click on the "Percentage view" button. The screen with the "Circle" percentage view opens.

   Result
   The circle fills up in clockwise direction and the current percentage value is displayed in the I/O field.

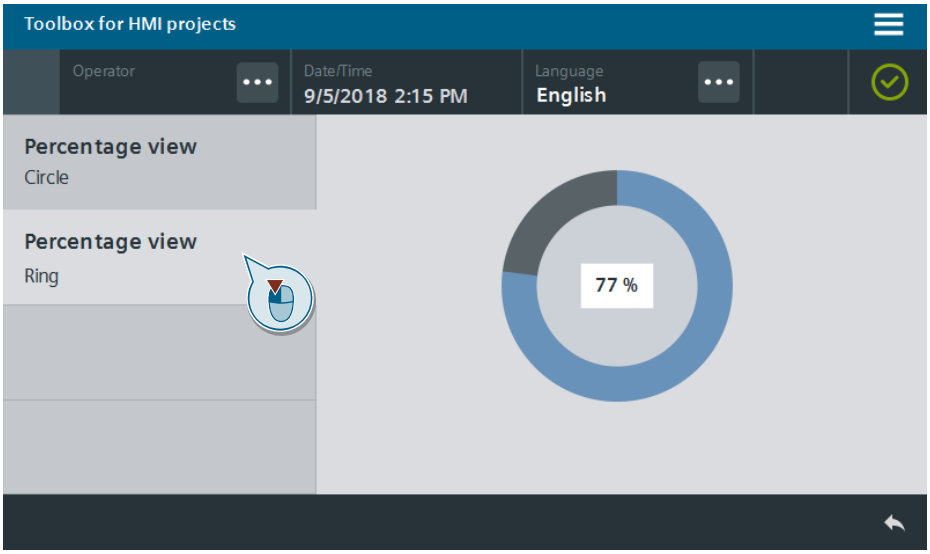
Figure 29-7



3. Open the screen with the "Ring" percentage value using the "Percentage view – Ring" button in the page navigation on the left.

   Result
   The ring fills up in clockwise direction and the current percentage value is displayed in the I/O field.

   Figure 29-8



30 Increase clarity – Bit monitor

30.1 General description

The bit monitor allows you to visualize positive, integer HMI tags (USINT - Byte, UINT - Word, UDINT - Double) bit by bit. This is particularly useful during commissioning and when analyzing error states.

The bit views are available as faceplates for 8-bit (data type: USINT), 16-bit (data type: UINT) and 32-bit tags (data type: UDINT) and can be used independent of one another.

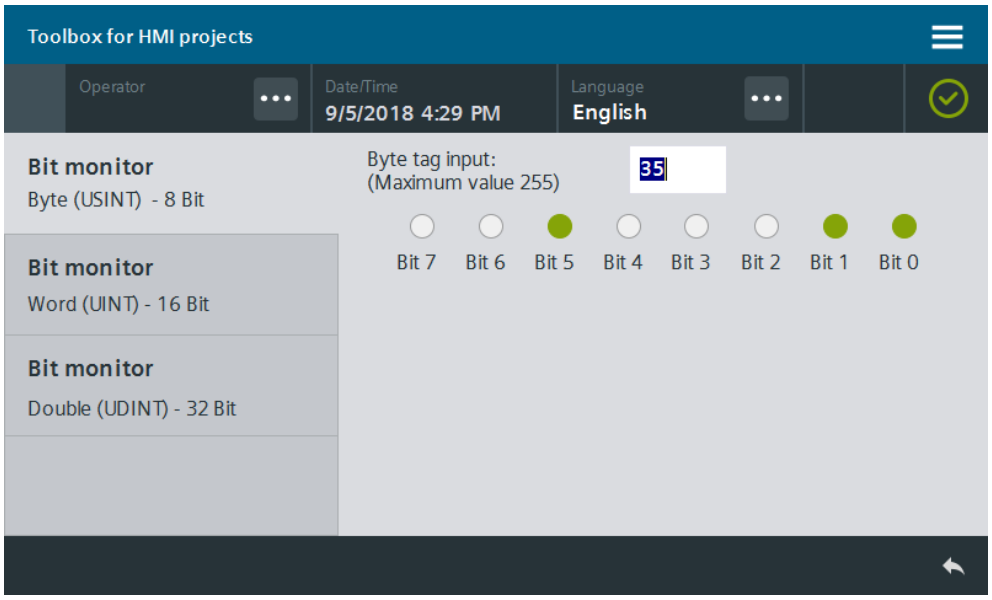
The HMI tag to be displayed is simply connected over the respective interface of the faceplate. The bit structures of the individual data types are available for further processing at the interface over HMI tags.

- "LHmiView_byteStructure" tag, UDT: LHmiView_typeByteBitMonitor
- "LHmiView_wordStructure" tag, UDT: LHmiView_typeWordBitMonitor
- "LHmiView_doubleStructure" tag, UDT: LHmiView_typeDoubleBitMonitor

An internal faceplate script masks the individual bits.

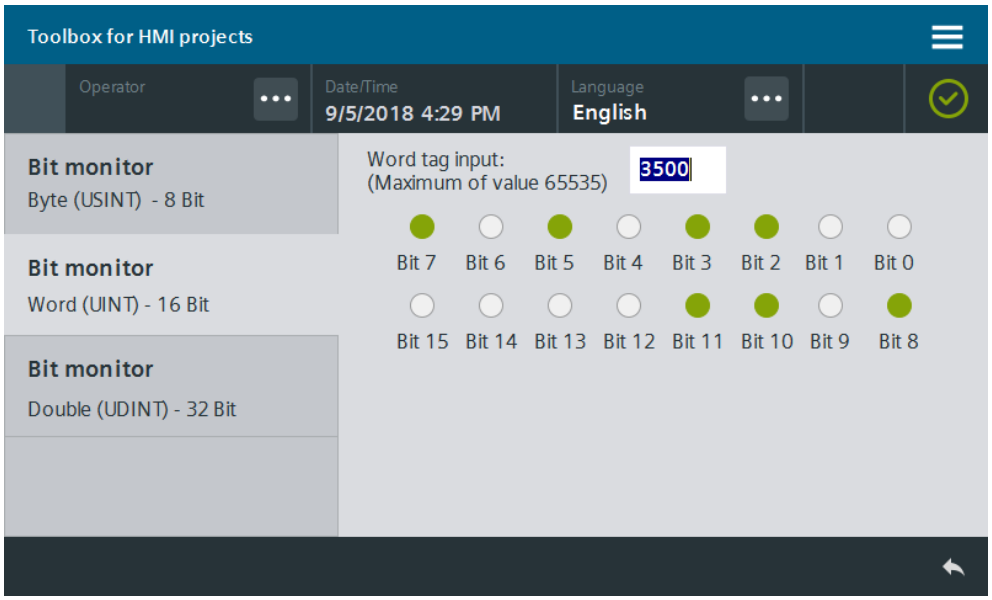
Bit monitor data type "Byte"

Figure 30-1



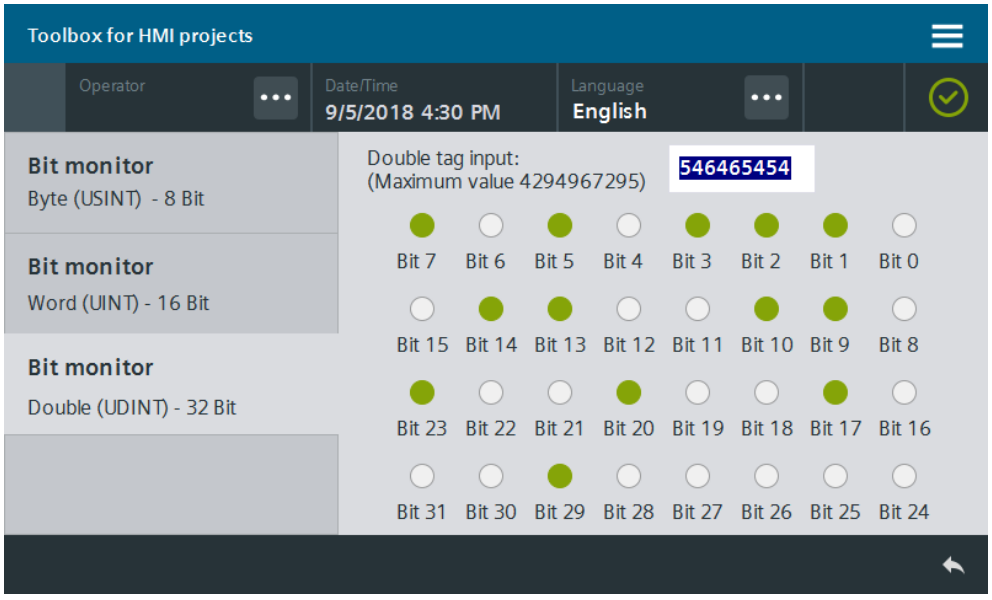
Bit monitor data type "Word"

Figure 30-2



Bit monitor data type "Double"

Figure 30-3



30.1.1 Hardware and software components

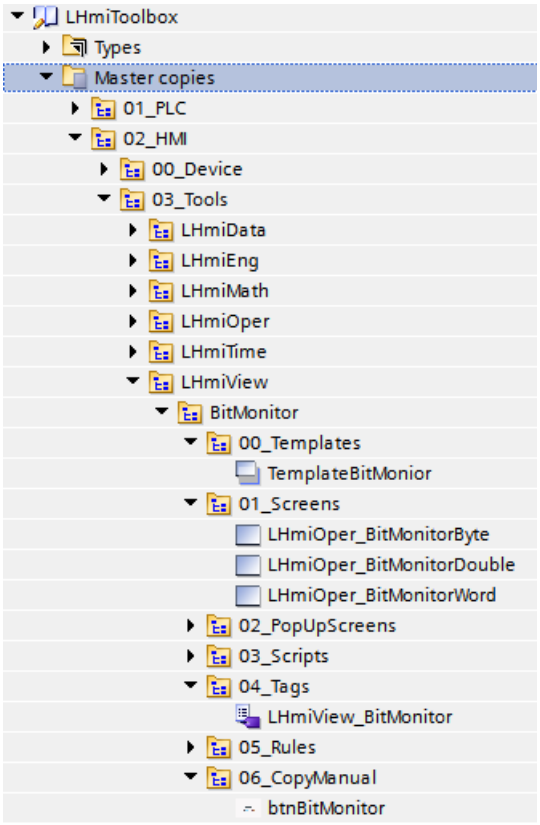
This application example is valid for:

- SIMATIC WinCC Comfort / Advanced V15.1
- SIMATIC Comfort Panels, Comfort PRO Panels, Outdoor Panels, Mobile Panels 2nd Generation
- SIMATIC WinCC RT Advanced V15.1

30.2 Integration into the user project

1. Open your WinCC configuration and the library with the tools. (Section 2.3).
2. Open the folder "Master copies > 02_HMI > 03_Tools > LHmiView > BitMonitor" of the library.
3. Drag the elements (Tag table) to the corresponding folder of the operator panel.

Figure 30-4



Note

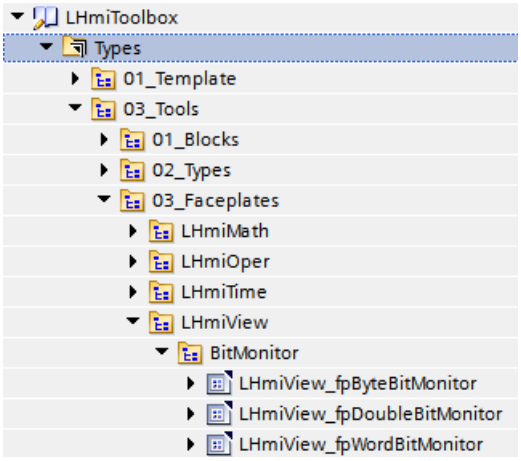
The library also contains the template "TemplateBitMonitor", the screens "LHmiView_BitMonitorByte", "LHmiView_BitMonitorWord", "LHmiView_BitMonitorDouble", as well as the "btnBitMonitor" button for calling the "BitMonitorByte" screen.

They are needed for the example project and are not part of the tool.

In the application example the internal tags "LHmiView_byteTag", "LHmiView_wordTag" and "LHmiView_doubleTag" are displayed via the bit monitor. The value is changed through an associated I/O field.

4. Open the folder "Types > 03_Tools > 03_Faceplates > LHmiView> BitMonitor" of the library.

   Figure 30-5

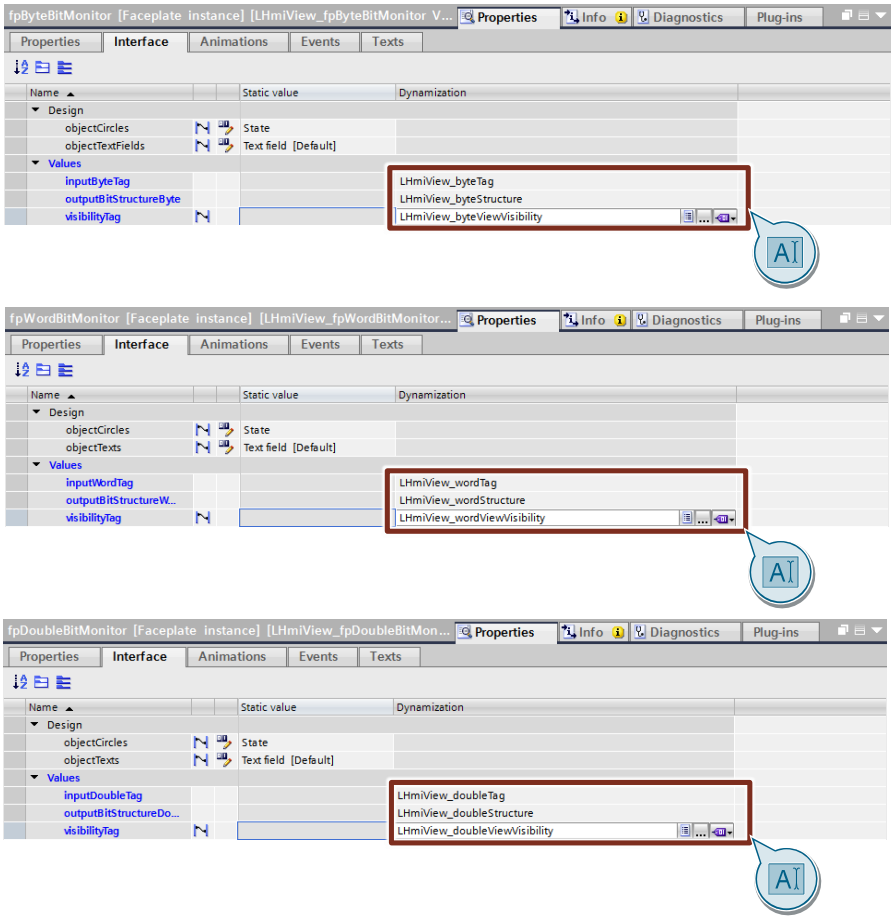


5. Open a screen and drag and drop a bit monitor of your choice to your screen. The faceplate is automatically copied to your project library.

6. Select the faceplate and open the interface of the faceplate.

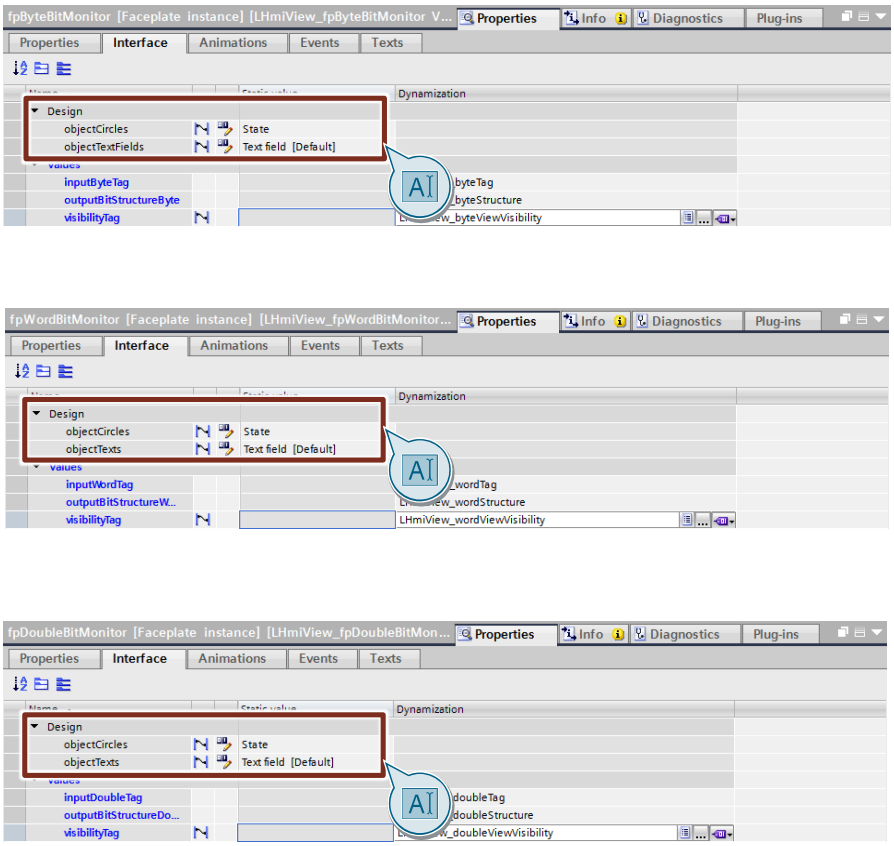
   Connect your tags for the process value (data type: USINT/UINT/UDINT) for the bit structure and the faceplate visibility to the properties of the "Values" category.

   Figure 30-6



7. **Optional**
   In the properties of the "Design" category, specify the style of the screen objects in the faceplate.

   Figure 30-7



8. Download the software to your operator panel or start the simulation.

30.3 Operation

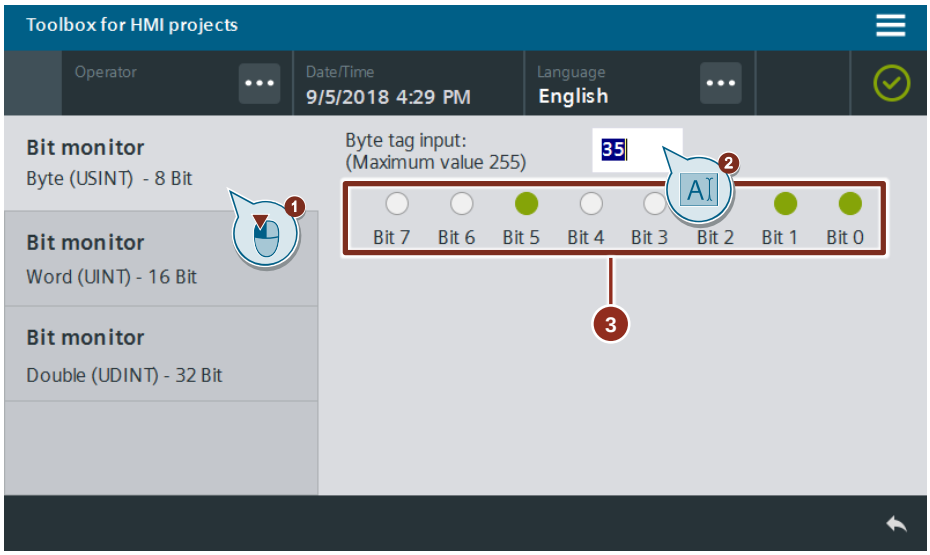
Note

The operation is explained with the help of the example project. When you use the tool in your own configuration, the call may be somewhat different.

The basic functionalities are not affected by this.

1. Open the visualization on your operator panel.
2. Open the Tools overview and click on the "Bit monitor" button. The screen with the "Byte" bit monitor opens.
3. Enter a value of your choice (2). The individual bits have a green background in the bit monitor (3).

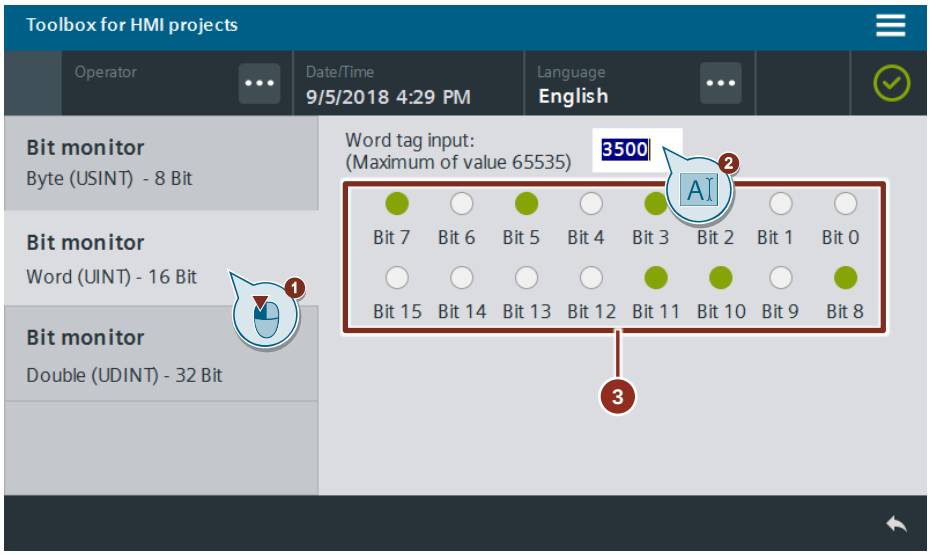
Figure 30-8



4. Open the screen with the "Word" bit monitor using the "Bit monitor – Word (UINT) - 16 Bit" button in the page navigation on the left (1).

   Enter a value of your choice (2). The individual bits have a green background in the bit monitor (3).

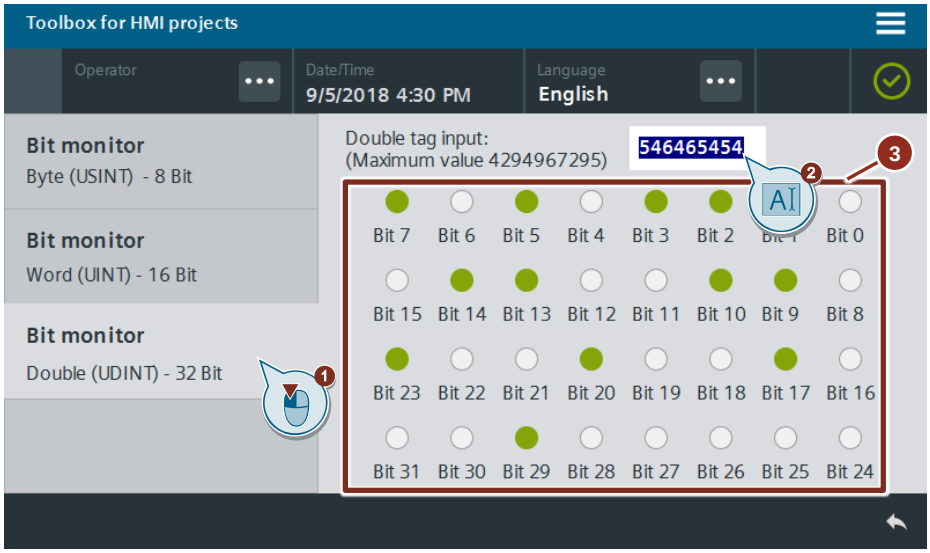
   Figure 30-9



5. Open the screen with the "Double" bit monitor using the "Bit monitor – Double (UDINT) - 32 Bit" button in the page navigation on the left (1).

   Enter a value of your choice (2). The individual bits have a green background in the bit monitor (3).

   Figure 30-10



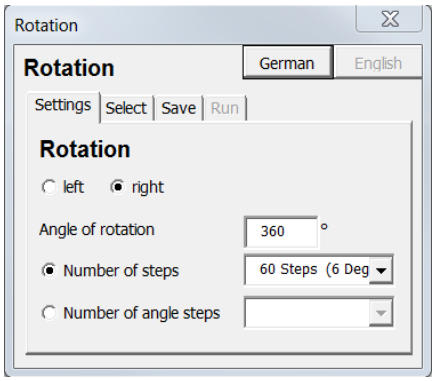
31 Simplified engineering – Rotation Tool

31.1 General description

In addition to color, motion is a good medium to simply and clearly illustrate the status of a machine, for example. It can, for example, be used to illustrate pumps, fans, motors, mixers, or gears.

The "Rotation Tool" is a Microsoft PowerPoint Add-In that you can use to automatically rotate and save screens in different status conditions as a "*.png" file. The tool is operated over its own dialog window.

Figure 31-1

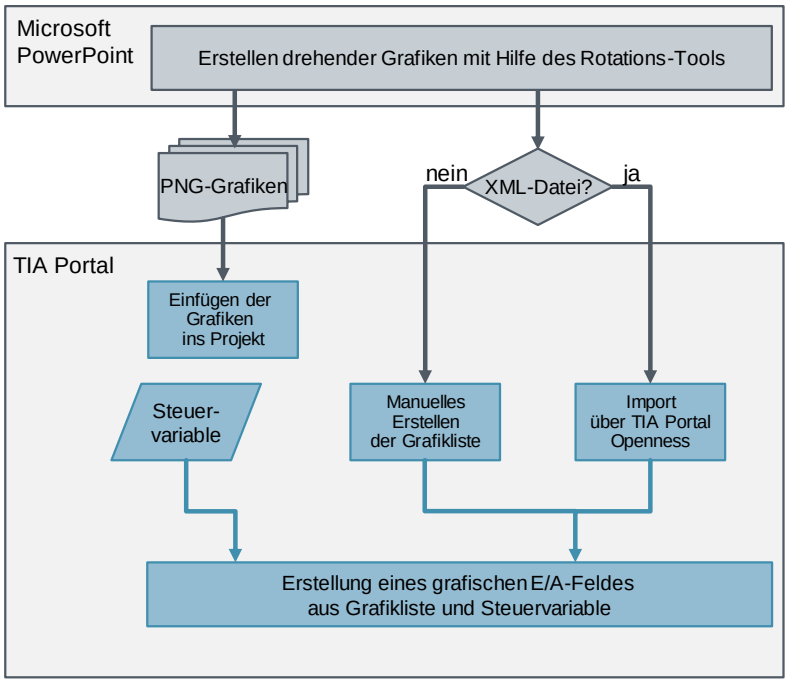


Optionally, you can directly create an "*.xml" file which you can import as a graphics list directly into the HMI project using TIA Portal Openness.

The gauge controls for Basic Panels (section 23) were also created using the Rotation Tool.

31.1.1 Principle of operation

Figure 31-2



31.1.2 Hardware and software components

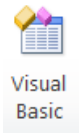
This application example is valid for:

- Microsoft PowerPoint 2010
- SIMATIC WinCC Basic / Comfort / Advanced V13 SP1 and higher
- SIMATIC Basic / Comfort Panels, Comfort PRO Panels, Outdoor Panels, Mobile Panels 2nd Generation
- SIMATIC WinCC RT Advanced V13 SP1 and higher
- **Optional:** SIMATIC TIA Portal Openness V13 SP1

31.2 Installation

1. Download the file "Rotation_tool.zip" and unzip the folder.
2. Open Microsoft PowerPoint. Click on "Developer".
   If the "Developer" tab is not displayed, you must first make it visible (see Microsoft Office Support entry).
3. Click on "Visual Basic".

   Figure 31-3

4. Under "Options > References", enable the references "Visual Basic For Applications", "Microsoft PowerPoint Object Library" and "Microsoft Forms Object Library".
5. Confirm the dialog with the "OK" button.
6. Click on "Add-ins".

   Figure 31-4

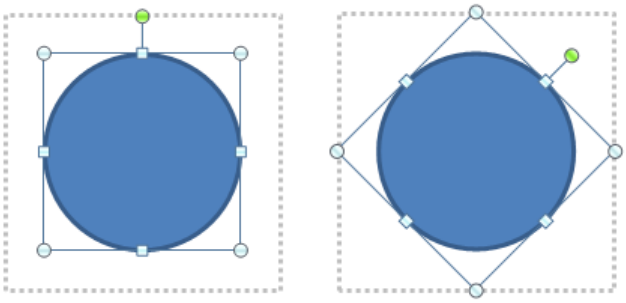
7. Click "Add new ...".
8. Select the "HMI_GraphicList_Designer.ppa" file in the unzipped folder and confirm your selection with "Open".
9. Confirm the security prompt with "Enable macros".
10. Close the "Add-ins" window.

31.3 Operation

1. Create a new PowerPoint presentation with a slide.
   Add the desired screen elements.
2. Add a rectangle as background to the slide. Select "Shape Fill > No Fill" and "Shape Outline > No Outline".

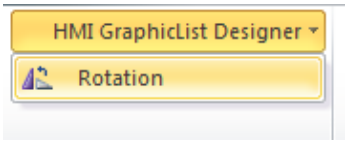
   Note
   Make sure that the selected rectangle is big enough to completely house the rotating objects in any position. As a result, all screens are saved in the same size.
   Note that circles, too, have a rectangular frame in PowerPoint so that they are displayed wider during rotating.

   Figure 31-5



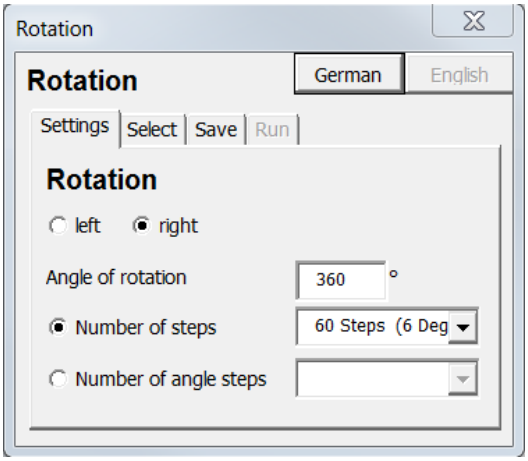
3. Click on "Add-Ins > HMI GraphicList Designer > Rotation" to start the tool.

   Figure 31-6



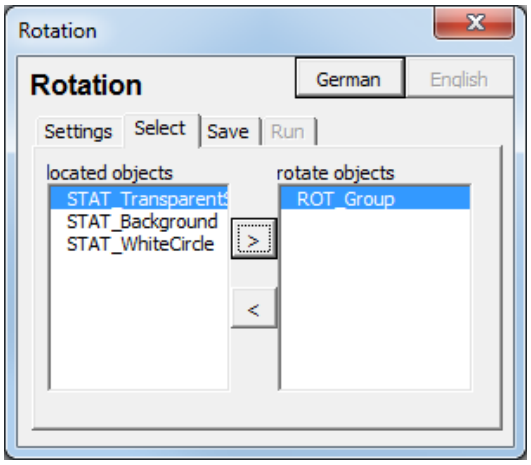
4. Select the following parameters in the "Settings" window: The
   - Direction of rotation
   - Angle of rotation
   - Number of intermediate steps of the rotation or size of the angle of an intermediate step using the selection list

   Figure 31-7



5. In the "Select" window, select the objects you wish to rotate and click the ">" arrow.

Figure 31-8



6. In the "Run" window check if a graphics list shall be created as an "*.xml" file (for import with "TIA Portal Openness").
7. Open your TIA Portal project.
8. In the project tree, open "Languages & Resources > Graphics library".
9. Drag and drop the screens from the Explorer to the graphics library.

Importing the graphics via TIA Portal Openness

1. Download the "TiaPortalOpennessDemo" demo application from entry id 108716692.
   If you do not yet use TIA Portal Openness, download the documentation and install TIA Portal Openness as described.
2. Link the application with the project and import the graphics list as described in the documentation.

Manual import

1. Create a new graphics list in your HMI operator panel.
2. Insert the screens from the graphics library into the graphics list and adapt the values.
3. Create a new screen in your operator panel. Add a graphic I/O field.
4. Under "Properties > Properties > General > Contents > Graphics list:" connect the related graphics list.
5. Specify the associated process tag under "Process > Tag:".

31.4 Tips and tricks

31.4.1 Determining the start position

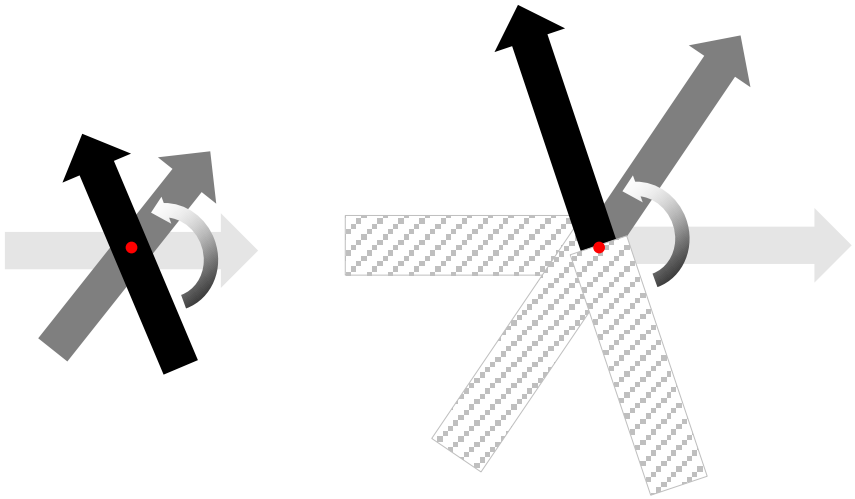
The Rotation Tool changes the "Rotation" property of a screen object.
Before the first screen is created, the "Rotation" value of any rotating element is set to 0°.

If a rotating element is to start at an angle other than 0°, right-click the element in the desired start position and click "Save as graphic...". Save the element in PNG format. Then insert the element as a graphic into the PowerPoint screen again.

31.4.2 Setting the rotation axis

The elements selected in the tool rotate through their center point. To choose another rotation axis, it is useful to group the desired element with a hidden element and then select the entire group for rotation.

Figure 31-9



31.4.3 Continuous rotation

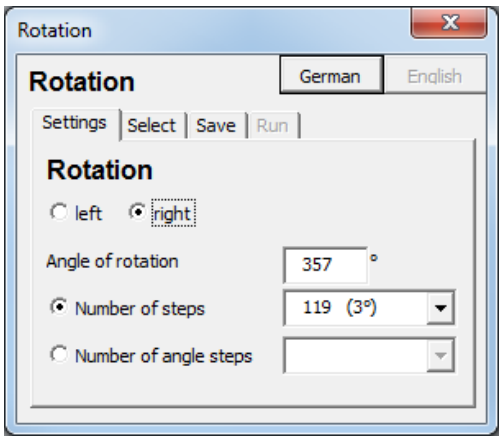
The tool creates in a first step a screen at a 0° rotation (initial state).

A rotation of 360° corresponds to 0°. For a graphic intended to continuously rotate through its own axis you should consider that the last intermediate step must be dropped to prevent two identical screens from following one another.

One way to achieve this is by skipping the graphics list element 0 or 100 when triggering via the control tag (e.g. "startValue" =1).

Alternatively, subtract the angle size of an intermediate step from the overall rotation angle to be able to select a step number reduced by 1 in the Rotation Tool.

Figure 31-10



31.4.4 Creating the control tag

If you intend not to display a real rotation of one of the objects contained in your process with the rotating object but simulate the rotation, you must create the control tag manually.

To do so you can use, for example, the "SimulateTag" system function at the "Loaded" event of the screen. In this case the object will always rotate when the screen is displayed.

If you want to also start and stop the rotation, you can use the STEP 7 function "LGF_SawTooth" (more information is available in the documentation list \3\).

32 Simplified engineering – Siemens icon font

32.1 General description

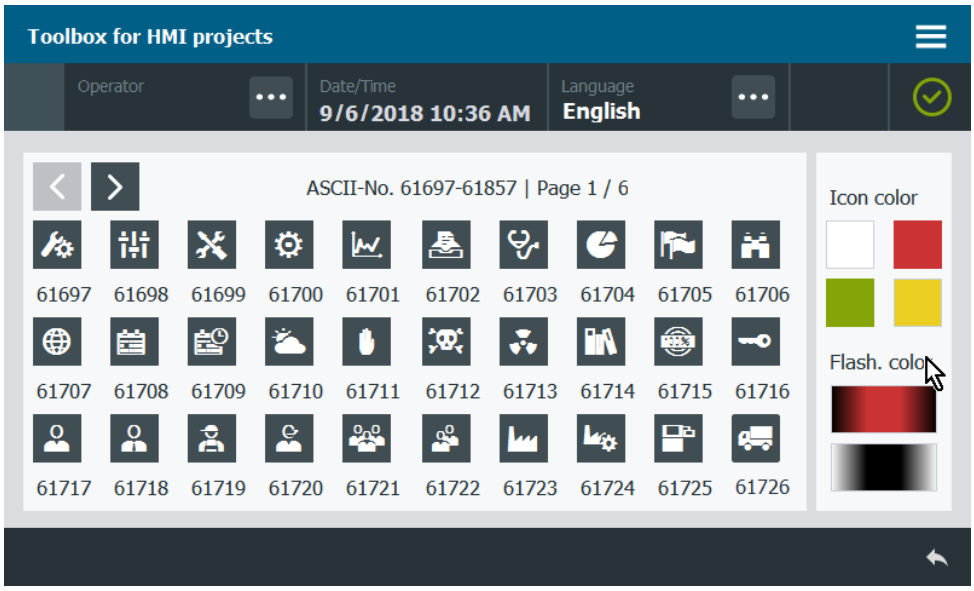
Siemens provides you with a font containing a large selection of icons that you can use as text, for example, for buttons.
In addition to the icons the font also contains a normal character set. This character set corresponds to the character set of the "Siemens Sans" font.

The documentation gives you a clear overview about available icons and shows you how to integrate such icons into your own project.

The attached download file "106226404_SiemensIconFont.zip" contains the "SiemensTIAPortalIcons.ttf" font.

In the example project, the icons are used as text on the buttons, and a color switching is used as example to show you how you can make use of the diverse dynamic sampling options.

Figure 32-1



32.1.1 Advantages through the use of icons

- **Easy multilingual engineering**
  You can use the icons in any language as they are understood without translation. For other languages, just copy the text list of the language you have already parametrized.
- **Free scaling**
  Characters are freely scalable. Unlike with graphics, you must not pay attention to the size or the resolution of the source material. Free scaling avoids possible built-up of artefacts / blurring effects when zooming in on / zooming out of screens.
- **Automatic transparency**
  Icon characters of the font have a transparent background. You must not pay attention to set the background transparent or color it according to the project color.

32.1.2 Hardware and software components

This application example is valid for:

- SIMATIC WinCC Basic / Comfort / Advanced V15.1
- SIMATIC Basic / Comfort Panels, Comfort PRO Panels, Outdoor Panels, Mobile Panels 2nd Generation
- SIMATIC WinCC RT Advanced V15.1

32.1.3 Available icons

The "Siemens TIA Portal Icons Standard" font includes a large selection of icons which are shown in the table below.

Note The ASCII characters 61824 to 61857 are supported in WinCC Professional only as of TIA V14 SP1.

Table 32-1

HEX	ASCII	Character	HEX	ASCII	Character	HEX	ASCII	Character
F101	61697		F102	61698		F103	61699	
F104	61700		F105	61701		F106	61702	
F107	61703		F108	61704		F109	61705	
F10A	61706		F10B	61707		F10C	61708	
F10D	61709		F10E	61710		F10F	61711	
F110	61712		F111	61713		F112	61714	
F113	61715		F114	61716		F115	61717	
F116	61718		F117	61719		F118	61720	
F119	61721		F11A	61722		F11B	61723	
F11C	61724		F11D	61725		F11E	61726	
F11F	61727		F120	61728		F121	61729	
F122	61730		F123	61731		F124	61732	
F125	61733		F126	61734		F127	61735	
F128	61736		F129	61737		F12A	61738	
F12B	61739		F12C	61740		F12D	61741	
F12E	61742		F12F	61743		F130	61744	
F131	61745		F132	61746		F133	61747	
F134	61748		F135	61749		F136	61750	
F137	61751		F138	61752		F139	61753	
F13A	61754		F13B	61755		F13C	61756	

HEX	ASCII	Character	HEX	ASCII	Character	HEX	ASCII	Character
F13D	61757		F13E	61758		F13F	61759	
F140	61760		F141	61761		F142	61762	
F143	61763		F144	61764		F145	61765	
F146	61766		F147	61767		F148	61768	
F149	61769		F14A	61770		F14B	61771	
F14C	61772		F14D	61773		F14E	61774	
F14F	61775		F150	61776		F151	61777	
F152	61778		F153	61779		F154	61780	
F155	61781		F156	61782		F157	61783	
F158	61784		F159	61785		F15A	61786	
F15B	61787		F15C	61788		F15D	61789	
F15E	61790		F15F	61791		F160	61792	
F161	61793		F162	61794		F163	61795	
F164	61796		F165	61797		F166	61798	
F167	61799		F168	61800		F169	61801	
F16A	61802		F16B	61803		F16C	61804	
F16D	61805		F16E	61806		F16F	61807	
F170	61808		F171	61809		F172	61810	
F173	61811		F174	61812		F175	61813	
F176	61814		F177	61815		F178	61816	
F179	61817		F17A	61818		F17B	61819	
F17C	61820		F17D	61821		F17E	61822	
F17F	61823		F180	61824		F181	61825	
F182	61826		F183	61827		F184	61828	
F185	61829		F186	61830		F187	61831	
F188	61832		F189	61833		F18A	61834	
F18B	61835		F18C	61836		F18D	61837	
F18E	61838		F18F	61839		F190	61840	
F191	61841		F192	61842		F193	61843	
F194	61844		F195	61845		F196	61846	
F197	61847		F198	61848		F199	61849	
F19A	61850		F19B	61851		F19C	61852	
F19D	61853		F19E	61854		F19F	61855	

HEX	ASCII	Character	HEX	ASCII	Character	HEX	ASCII	Character
F1A0	61856		F1A1	61857				

32.2 Installing the font

32.2.1 Installation in Windows

There are three options to install the font in Windows.

Download the font on the entry page and unzip the "106226404_SiemensIconFont.zip" file into a folder of your choice for installation. The "SiemensTIAPortalIcons.ttf" file contains the "Siemens TIA Portal Icons Standard" font.

Note

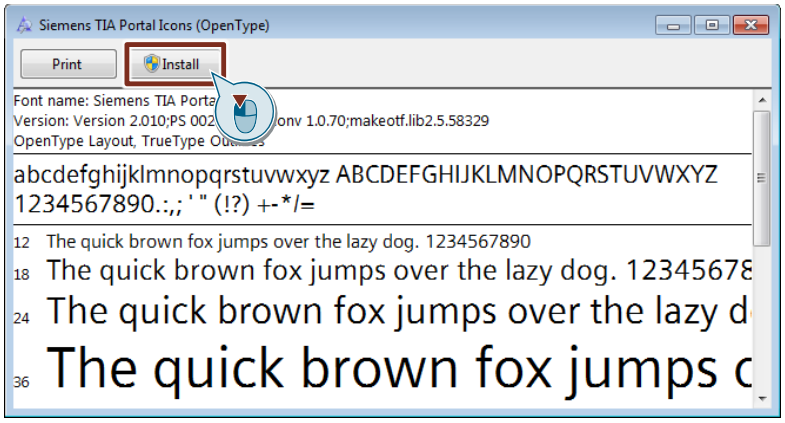
Close all instances of the TIA Portal prior to the installation.

If an instance of the TIA Portal was open during the installation of the font, close the TIA Portal and then restart it.

Option 1

1. Double-click the "SiemensTIAPortalIcons.ttf" file to open it. The font preview opens.
2. Click "Install".

Figure 32-2

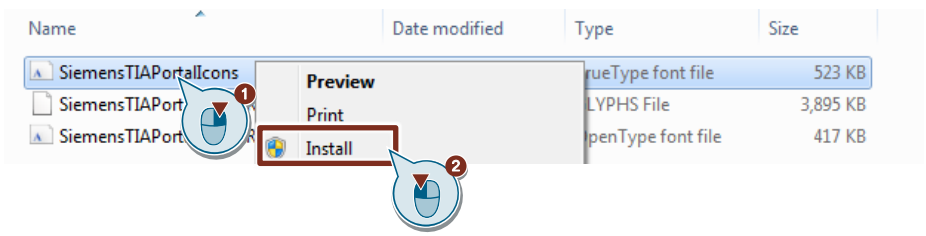


Note
You need to have the required administrator rights to do this.

Option 2

1. Right-click the "SiemensTIAPortalIcons.ttf" file. The shortcut menu opens.
   Click "Install".

Figure 32-3



Note
You need to have the required administrator rights to do this.

Option 3

1. Select the file "SiemensTIAPortalIcons.ttf" and copy the file using the key combination <Ctrl> + <C>.
2. Open the "Fonts" folder in the Control Panel.
3. Add the "SiemensTIAPortalIcons.ttf" file with the key combination <Ctrl> + <V>.

32.2.2 Installation on Basic / Comfort Panels

Automatic transfer by downloading the configuration

The font is transferred to the panel along with the project and therefore must not be installed on the panel manually. The project contains the necessary data during download to the operator panel.

The font is not saved in the font folder of the HMI operator panel. This means that the font is not recognized on the HMI operator panel outside of Runtime.

Note The font is not saved in the font folder of the HMI operator panel. This means that the font is not recognized on the HMI operator panel outside of Runtime.

Manual installation (optional)

If you want to use the font outside of Runtime, for example, display a Word file with characters of this font on the operator panel, install the font manually.

1. Copy the "SiemensTIAPortalIcons.ttf" to a storage medium of your choice and connect it with your HMI operator panel.
2. Open the Explorer via "Desktop > My Computer".
3. Go to your storage medium and copy the "SiemensTIAPortalIcons.ttf" file.
4. Open the "Windows > Font" folder.
5. Add the "SiemensTIAPortalIcons.ttf" file to the "Fonts" folder.

Note The installed font is only available for a few specific applications.

Under Windows CE ("Panels operating system"), you cannot change the system font.

32.3 Integration into the user project

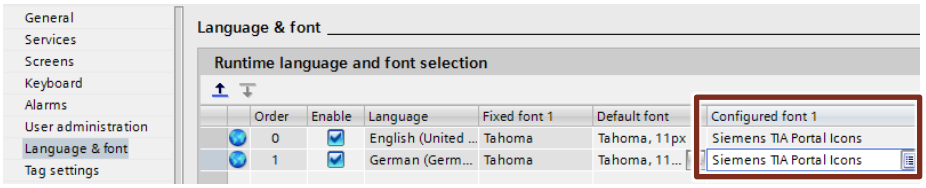
32.3.1 Integrating the font into your project

Note When you configure a PC station with SIMATIC WinCC RT Advanced, you do not have to integrate the font. You only have to install the font. All installed fonts of the Windows operating system are available for the configuration.

To use the "Siemens TIA Portal Icons" font, integrate it as configured font into your HMI project.

1. Open the folder of your operator panel in the project tree.
2. Open the "Runtime settings" with a double-click.
3. Select "Language & font".
4. Select the cell under "Configured font 1".
5. Click on the selection icon and select the "Siemens TIA Portal Icons" font from the selection list.
6. If necessary, apply the settings for additional configured languages.

Figure 32-4



Note With Basic Panels you can configure your own "Configured font 1" in addition to the system font.

With other Panels you can configure up to two separate fonts "Configured font 1" and "Configured font 2" in addition to the system font.

32.3.2 Using the font

Setting the font, font style and font size

You have to manually customize the font, as well as associated font style and font size for basic objects and elements.

1. Select the basic object or element in which the symbol is to be displayed.
2. Click on "Properties > Text format".
3. In "Format > Font", click the "…" button.
4. Select the "Siemens TIA Portal Icons" font and make the desired settings for "Font style" and "Size".
5. Click on "OK".

Text input of the icon

1. Select the basic object or element in which the symbol is to be displayed.
2. Click on "Properties > General".

   Note

   Make sure that "Text" or "Graphics and text" is selected as mode under "Buttons".
3. Click in the input box for the text input.
4. Press and hold the <Alt> key and enter the "ASCII" character code of the icon (see Table 32-1).
5. Release the <Alt> key.
6. Press "Enter" or click an area outside of the "General" window. The icon appears as text of the object.
   The icon is not displayed in the input area of the "General" window. A square indicates that the input was successful.

   Note
   An input error has occurred or an incorrect "ASCII" code was entered if no text, a question mark or an unexpected icon appears in the input field.

   Solution: Erase the text and repeat the input.

Note

The sequence of the steps "Setting of font, font style and font size" and "Text input of the icon" can be changed. However, the specified sequence is recommended.

The font can also be used when entering text in text lists. Input takes place as described above.

You can write several icons one after the other just like text characters. Simply repeat the input.

A combination of symbol and text is also possible. The font size depends on the default text format of the basic object or element.

Positioning the icons

Under "Properties > Text format > Alignment" you can set the general horizontal and vertical alignment of the font.

Follow the description below to more accurately position the icon on the basic object or element.

1. Select the basic object or element with the icon.
2. Click on "Properties > Layout".
3. Enter the desired margins under "Text margins".

Multilingual configuration of icons

1. Open the "Languages & resources > Project texts" folder in the project tree.
2. Scroll down; the symbols and special characters are at the end of the list and can be identified by the square character (in standard sorting).
3. Select all icons.
   Select the first entry and scroll down to the last entry. Keep the <Shift> key pressed and select the last entry.
4. Copy the selected area. Scroll to the first icon entry.
5. Next to the first icon entry, click the cell of another configured language. Paste the copied area.
6. Repeat the last item for each configured language.

Transferring the font style to other objects

Within a screen, you can assign the same font style to several objects all at once.

1. Draw a frame around the desired objects or click a single object. To interconnect several selections, press and hold the <Shift> key and draw additional frames or select additional single objects.
2. To remove an object from the selection, keep holding down the <Shift> key and click the object you wish to remove from the selection.
3. Release the <Shift> key and click "Properties".

   Assign the font and the font style as described in the chapter "Setting the font, font style and font size".

   If the desired target objects are not in the same screen, you can copy the set font style and paste it into the desired object.
4. In the "Text format" window, right-click the font and select "Copy" (or select the entry and use the shortcut <Ctrl>+<C>).
5. Select the desired object and select the available font in the "Text format" window.
6. Right-click the selected area and select "Paste" (or use the shortcut <Ctrl>+<V>).

   Note

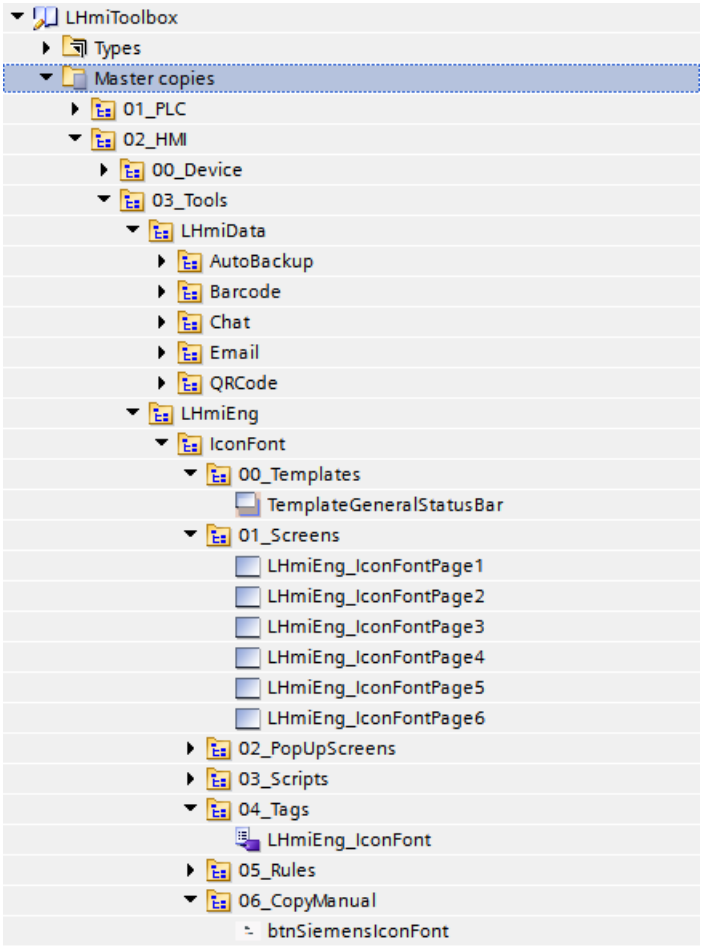
   You can also copy an object for which you have already set the font and the style. The properties are retained in the process.

32.3.3 Integrating the example configuration

1. Open your WinCC configuration and the library with the tools. (Section 2.3).
2. Integrate the font as described in section 32.3.1.
3. Open the folder "Master copies > 02_HMI > 03_Tools > LHmiEng > IconFont" of the library.

4. Drag the elements (Template, Screens, Tag table) to the corresponding folder of the operator panel.

Figure 32-5



Note

Depending on the size of the HMI operator panel, it may be necessary to adapt the screens.

5. Drag the "btnSiemensIconFont" button from the library to your screen. You use this button to open the "LHmiEng_IconFontPage1" screen.
6. Download the software to your operator panel or start the simulation.

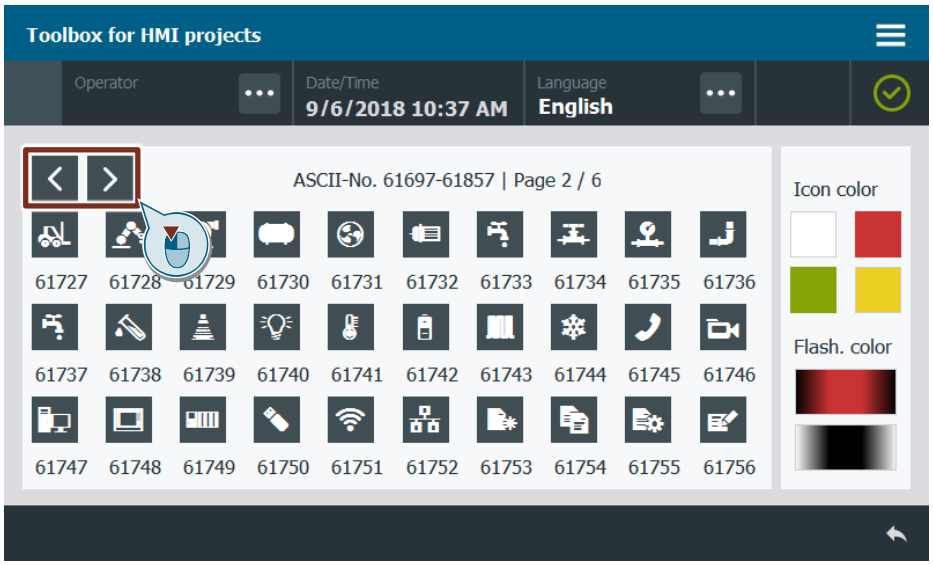
32.4 Operating the example configuration

Note The potential uses of the font are shown using the example project. When you use the tool in your own configuration, the use of the font may be somewhat different.

1. Open the visualization on your operator panel or your simulation.
2. Open the Tools overview and click on the "Icon font" button. The screen with the first 30 icon buttons opens.

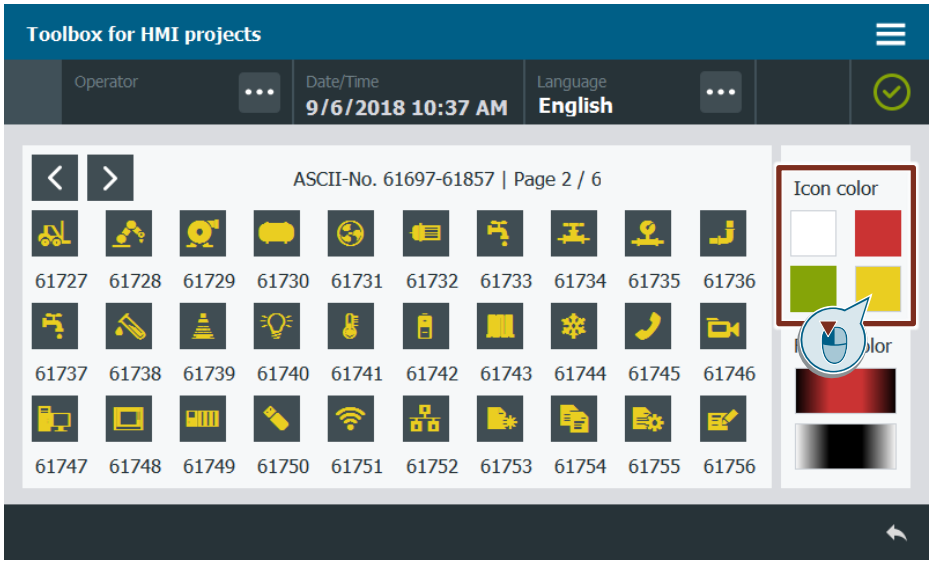
3. Use the arrow keys to switch between the screens. You will see various screens with buttons on which potential icons are shown.

Figure 32-6



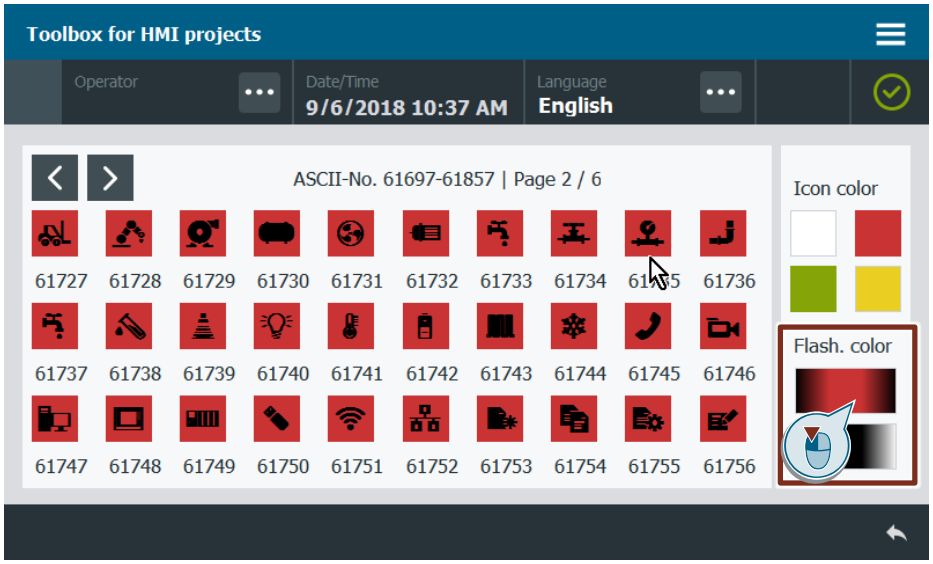
4. Change the icon color to a color of your choice by using the color buttons. The color changes for all icons.

Figure 32-7



5. Let the icons flash. Click on a button of your choice.

Figure 32-8



33 Appendix

33.1 Service and Support

Industry Online Support

Do you have any questions or need assistance?

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

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

Product information, manuals, downloads, FAQs and application examples – all information is accessible with just a few mouse clicks at:
https://support.industry.siemens.com/

Technical Support

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

You can send questions to Technical Support via the web form at:
https://www.siemens.com/industry/supportrequest

SITRAIN – Training for Industry

With our globally available training courses for Siemens products and solutions, we support you in step with actual practice, with innovative learning methods and with a customized training concept.

You can find out more about the training courses offered as well as their locations and dates at:
https://www.siemens.com/sitrain

Range of services

Our range of services includes the following:

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

You can find detailed information on our range of services in the service catalog at:
https://support.industry.siemens.com/cs/sc

Industry Online Support app

You will receive optimum support wherever you are with the "Siemens Industry Online Support" app. The App is available for Apple iOS, Android and Windows phones:
https://support.industry.siemens.com/cs/ww/en/sc/2067

33.2 Links and Literature

Table 33-1

No.	Topic
\1\	Siemens Industry Online Support https://support.industry.siemens.com
\2\	Entry page of the application sample https://support.industry.siemens.com/cs/ww/en/view/106226404
\3\	Application example "Library with general functions (LGF) for STEP 7 (TIA Portal) and S7-1200 / S7-1500" https://support.industry.siemens.com/cs/ww/en/view/109479728
\4\	"SIMATIC WinCC Advanced V14" Manual https://support.industry.siemens.com/cs/ww/en/view/109742297/91108514187
\5\	"SIMATIC WinCC Advanced V14 SP1" Manual https://support.industry.siemens.com/cs/ww/en/view/109747174
\6\	Application example "SIMATIC HMI Control Panels - Innovative Design and Operation" https://support.industry.siemens.com/cs/ww/en/view/91174767
\7\	"SIMATIC HMI Devices Comfort Panels" Manual https://support.industry.siemens.com/cs/ww/en/view/49313233/99638204043
\8\	Wikipedia entry on the topic "Reed Solomon" http://en.wikipedia.org/wiki/Reed%E2%80%93Solomon_error_correction
\9\	FAQ "What are the functional differences between the different SIMATIC panels?" https://support.industry.siemens.com/cs/ww/en/view/40227286
\10\	"SIMATIC WinCC Advanced V14 SP1 – Programming reference" Manual https://support.industry.siemens.com/cs/ww/en/view/109747176/76210564491
\11\	Homepage of the barcode font provider "Logitogo" http://www.logitogo.com/html/barcode39_erstellen.html
\12\	TIA Portal Openness: Introduction and Demo Application https://support.industry.siemens.com/cs/ww/en/view/108716692
\13\	Microsoft Office Support entry "Show the Developer tab" https://support.office.com/en-us/article/show-the-developer-tab-e1192344-5e56-4d45-931b-e5fd9bea2d45?ui=en-US&rs=en-US&ad=US
\14\	Application example "SIMATIC HMI Option +" https://support.industry.siemens.com/cs/ww/en/view/109754400

33.3 Change documentation

Table 33-2

Version	Date	Change
V5.0	02/2019	• Release for documentation, library and project for V15.1