

Industry Online Support

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NEWS

# **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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## 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.



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	$\bigcirc$	Alarm function	
Calendar		Calendar function	
Stopwatch	٩	Stopwatch with five lap times	
Timer	$\odot$	Timer function with five adjustable timers	
Time switch		Time switch function with defined trigger bit	
World clock	Optimized in the second sec	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	$\times$	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	(ন)	Unit converter	
Calculator		Windows-independent calculator	

### "Simplified operation" subject area

Name	Symbol	Description
On-Screen Keyboard	5 <u>000</u> 0	Own on-screen keyboards
Home button	0	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)	X	Screen saver HMI-triggered
Individual screen saver Individual screen saver (solution 2)	X	Screen saver PLC-triggered
Check/radiobox	$\checkmark$	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	6	Gauge control for Basic Panel
Gauge Controls for Comfort Panel /WinCC RT Advanced	3	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	K	Hiding a background by call of pop-up screen
Waiting view	0	Waiting view for operators
Percentage view Percentage view	<b>S</b>	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	( <sup>(</sup> *)	PowerPoint Add-In Creating multiple rotating graphics from a graphic for integration into a graphic list
Siemens icon font	1	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 Quantit
y

	У		
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	6ES7822-105	Engineering license for STEP 7 Professional required
WinCC Engineering V15 / V15.1	1	6AV2105-0	Engineering license for WinCC Advanced required
WinCC Runtime Advanced V15 / V15.1	1	6AV21045-0	Comfort Panels ≥ 7" display size can also be used
Microsoft Power Point 2010	1		

Article number

Note

This application example consists of the following components:

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





### 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.



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

#### Figure 2-3

PROFINET interface [X1]	🔯 Properties 🚬 🚺 Info 🤢 🗓 Diagnostics 📰 🗖 🗉 🤜
General IO tags Sys	tem constants Texts
Options	Ethernet addresses
Ethernet add	Interface networked with
Advanced opt	Subnet: PN/IE_1  Add new subnet
	ISO protocol
	Use ISO protocol
	MAC address: 08 -00 -06 -01 -00 -00
	IP protocol
	Se IP protocol
	IP address: 172 . 16 . 53 . 5
	Subnet mask: 255 . 255 . 0 . 0
	Use router Router address: 0 . 0 . 0 . 0
	PROFINET
	PROFINET device name: Converted name: Device number: 0

**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.
- Open the shortcut menu of the device you want to replace by right clicking on it and click "Change device / version". ("Change device / version").

Project tree		
Devices		
Ê		🔳 📑
2018-08-13_16-49_Tool	box_TemplateSuiteV15	
📑 Add new device		
📩 Devices & networks		
PLC_1 [CPU 1516-3 F	PN/DP]	
ト 🛅 HMI (17900 Comfor	Change device / version	
La _ADV     SIMAT     Ungr     devices	Open Open in new editor	
Security settings		

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

ange device – TP900 Comfort		
Current device:	Version: 15.0.0.0 Description: 5M 7.0" TFT display, 800 x 480 pixels, 16M US colors; Touch screen; 1 x MPI/ROFIBUS DP, 1 x PROFINETIndustrial Ethernet it interface with MRP and RTIRT support	<ul> <li>a / 30 Common Coulds</li> <li>b / KP700 Common</li> <li>9" Display</li> <li>12" Display</li> <li>15" Display</li> </ul>
Compatibility information		< m >

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".

General	General
Services	
Screens	Screen
Keyboard	Start screen: 00_Startscreen
Good Manufacturin	
Alarms	Default template:
User administration	
Language & font	Style of the HMI device: 01_Templatel04_StyleIstyleTemplatel
OPC settings	Adapt font size to style:
Tag settings	
	Screen resolution: 800x480
	Color depth: 32 bit
	Lock task switching:
	Load names: 🧭

### 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

	Configured access nodes of "PLC_1"					
	Device	Device type	Slot	Interface type	Address	Subnet
	PLC_1	CPU 1516-3 PN/DP	1 X1	PN/IE	172.16.53.4	PN/IE_1
		CPU 1516-3 PN/DP	1 X3	PROFIBUS	1	
		CPU 1516-3 PN/DP	1 X2	PN/IE	192.169.0.1	
		Type of the PG/PC inte	rface:	PN/IE		•
		PG/PC inte	rface:	Intel(R) PRO/	1000 MT Network Cor	inection 💌 🖲
	Con	nection to interface/su	bnet:	Direct at slot '1	X1'	- 💎
		1st gat	eway:			-
	Select target device:				Show devices with	the same addre
	Device	Device type	Interf	ace type Ad	dress	Target devic
	PLC_1	CPU 1516-3 PN/DF	PN/IE	17	2.16.53.4	PLC_1
° E D	-	3-	PN/IE	Ac	cess address	-
Flash LED						
						<u>Stari searc</u>
line status informatio	ו:				Display only error	messages 🛛 🎽
	ompatible devices of 1	accessible devices fou	ind.			
Retrieving device inf						
Scan and informatio	n retrieval completed.					
					Loa	d Cancel

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.> 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

Project	Edit	View	Insert	Online	Options	Tools	Window	Help
📑 🔁	🔒 Sav	e projec	t 昌	Х 🗈 🗊	🖹 🗙 🔊	± (24 ±	📑 🖥	🖥 🛄 🌆 🖳 😹 💋 Go online 🖉 Go offline

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





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



- 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.

	Configured access n	-				
	Device	Device type	Slot	Interface type	Address	Subnet
	PLC_1	CPU 1516-3 PN/DP	1 X1	PN/IE	172.16.53.4	PN/IE_1
		CPU 1516-3 PN/DP	1 X3	PROFIBUS	1	
		CPU 1516-3 PN/DP	1 X2	PN/IE	192.169.0.1	
	т	ype of the PG/PC interfac	e: 💻	.PN/IE		-
		PG/PC interfac	<u> </u>	PLCSIM		
	ionne	ction to interface/subn	et: Di	rect at slot '1 X1'		- 💎
		1st gatewa	iy:			▼ 🖲
	Select target device	:			Show devices with t	he same addre
	Device	Device type			dress	Target devic
	CPUcommon	CPU-1500 Simula			2.16.53.4	CPUcommon
r g	-	9	PN/IE	Ac	cess address	
line status informatior					Display only error	<u>Star</u> searc messages
Retrieving device inf		I accessible devices for	ind.			

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

Figure 2-14

ad pre	eview			
		before loading		
Status	1	Target	Message	Action
1 <mark>1</mark>	0	▼ PLC_1	Ready for loading.	Load 'PLC_1'
	0	Simulated module	The download will be performed to a simulated PLC.	
	0	Software	Download software to device	Consistent download
	0	Text libraries	Download all alarm texts and text list texts to device	Consistent download
:				
				Refresh
			Finish	Load Cancel

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	2-15
----------	------



7. PLCSIM switches to "RUN" mode.

You close the simulation with the "X" button of the PLCSIM.

Figure 2-16

PLC SIM Siemens	e -×
PLC_1 [CPU 1516-3 PN/DP]	
SIEMENS	
0	RUN
	STOP
ERROR MAINT	MRES
X2 1	92.169.0.1
X1 1	72.16.53.4
<kein projekt=""></kein>	

### 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

Project Edit View		•	· · · · · · · · · · · · · · · · · · ·	
📑 📑 🔚 Save projec	t 昌 🐰 🗎 🛅	🗙 沟 ± (Pl ± 📳	🖥 🗓 🌆 🖳 🐺 💋 Go online 👔	Go offline

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.
- 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

Look in:	🔋 LhmiToolbo	x	🝷 🧕 🖉 💌	
(Ha	Name	*	te modified	Туре
and the second s	Additiona	lFiles	.05.2018 16:07	File fold
Recent Places	📗 IM		29.05.2018 16:07	File fold
	퉬 System		16.08.2018 13:09	File fold
	🐌 TMP		29.05.2018 16:16	File fold
Desktop	퉬 UserFiles		29.05.2018 16:07	File fold
<u></u>	퉬 XRef		29.05.2018 16:07	File fold
1 C C C C C C C C C C C C C C C C C C C	🔛 LhmiTool	box.al15	16.08.2018 13:09	Siemens
Libraries				
Computer				
	•			,
Network	File name:	LhmiToolbox.al15	-	Open
	Files of type:	Global library	•	Canc

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".

<b>3</b> • •
✓ Global libraries
₫₫₽₽₩ 1818
Ull Buttons-and-Switches
Drive_Lib_S7_1200_1500
Drive_Lib_S7_300_400
Energy Suite
Long Functions
Monitoring-and-control-objects
Documentation templates
LhmiToolbox
▼ Types
<ul> <li>E 01_Template</li> </ul>
04_Style
<ul> <li>Image: Image: Image:</li></ul>
<ul> <li>Ei 01_Blocks</li> </ul>
E LGF
🕨 🔚 LHmiOper
🕨 🔚 LHmiTime
<ul> <li>D2_Types</li> </ul>
🕨 🔚 LHmiTime
🕨 🔚 LHmiView
💌 🔚 03_Faceplates
🕨 🔚 LHmiMath
🕨 🔚 LHmiOper
LHmiTime
🕨 📴 LHmiView
04_Styles
🕨 🔚 LHmiOper
Master copies
• 📴 01_PLC
▼ 102_HMI
O_Device
▼ 100 Tools
Tools_Overview1
Tools_Overview2
LHmiData
LHmiEng
LHmiMath
LHmiOper
LHmiTime
LHmiView
Common data
Languages & resources

### 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.



3. Click on a tool of your choice.



 Use the Back button in the status bar to jump to the previous screen. Figure 2-25

### 2 Engineering

5. Click on the "More tools" button to switch between the tool overviews. Figure 2-26

-igure 2-26				
Toolbox for HM	/II projects			≡
Operator	•••• Date/Tim 8/14/20		nguage nglish	► ⊘
Calendar	(1) Alarm	() Stopwatch	) Timer	) Worldclock
Time switch	Chat	Barcode	QR Code	Email
Auto. Backup	Calculator	<b>SI</b> Unit converter	Keyboards	More tools
Toolbox for HN				
Operator	Date/Tim 8/14/20		nguage nglish	► ⊘
More tools	Home button	Screensaver	Check/radiobox	Move Pop-up
Seg. Control	Notes	File explorer	Table view	Change Background
<b>O</b> Waiting view	Percentage view	Bit monitor	Icon font	Rotation tool

### 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

Operator	•••	Date/Time 8/14/2018 4	1:45 PM		Lang Eng			ł	•••		(
Calendar view				>		Aug	just		201	8	
August 2018 - Septembe	er 2018		CW	Mon	Tue	Wed	Thu	Fri	Sat	Sun	
Events			31			01	02	03	04	05	
Create new event	$\sim$		32	06	07	08	09	10	11	12	
Events			33	13	14	15	16	17	18	19	
Overview			34	20	21	22	23	24	25	26	
			35	27	28	29	30	31			

### InScreen navigation

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



### 2.5 Error handling

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

Figure 2-29

Toolbox for HMI pr	ojects		≡
Operator	Date/Time 8/15/2018 3:18 PM	Language English	🚺
Alarm			
Enable			
Set time	###### : ######	: ######	
Reminder			
_			•

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

Toolbox for HMI projects										≡
	Date/Time 3/17/2018 9:34 AM		Lang <b>Eng</b>	uage lish		·	••			$\odot$
<b>Calendar view</b> August 2018 - September 2018	<	>		Aug	ust		201	8		
August 2018 - September 2018	CW	Mon	Tue	Wed	Thu	Fri	Sat	Sun		
Events	31			01	02	03	04	05		
Create new event	32	06	07	08	09	10	11	12		
Events	33	13	14	15	16	17	18	19		
Overview	34	20	21	22	23	24	25	26		
	35	27	28	29	30	31				
Next Event: 8/17/2018 10:31:00 AM, Reminder: Event 1									•	

#### 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 2<sup>nd</sup> 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).
- 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
▼ 💭 LHmiToolbox
▶ □ Types
✓ ☐ Master copies
► D1_PLC
• 🖬 00_Device
<ul> <li>▼ 100_bettee</li> <li>▼ 100_Tools</li> </ul>
<ul> <li>E: LHmiData</li> </ul>
LHmiEng
LHmiMath
LHmiOper
▼ LHmiTime
Alarm
👻 🔚 Calendar
E: 00_Templates
TemplateCalendar
Image: Second
LHmiTime_CalendarCreateEvent
LHmiTime_CalendarViewEvents1
LHmiTime_CalendarViewEvents2
LHmiTime_CalendarViewEvents 3
LHmiTime_CalendarViewEvents4
LHmiTime_CalendarViewEvents5
LHmiTime_CalendarViewMonth0
LHmiTime_CalendarViewMonth1
D2_PopUpScreens
O3_Scripts
LHmiTime_vbsCalendarEvent
LHmiTime_vbsCalendarSaveOldEvent
LHmiTime_vbsGenerateCalendar
LHmiTime_vbsShowEventPage
LHmiTime_vbsTransferSenderDate
▼ 🔁 04_Tags
🖳 LHmiTime_CalendarTags
Eii 05_Rules
▼ 📴 06_CopyManual % btnCalendar
<ul> <li>btncalendar</li> <li>Ea 07_Schelduled tasks</li> </ul>
5 LHmiTime_CalendarEvent
5 LHmiTime RefreshCalendar

### 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

Toolbox for HMI projects	;									≡
Operator	Date/Time 8/17/2018	2:12 PM		Lang Eng			ł	••		$\odot$
<b>Calendar view</b> August 2018 - September 2018			>		Aug Wed	·	Fri	<b>201</b> Sat	<b>8</b> Sun	
Events		31			01	02	03	04	05	
Create new event	_2	32	06	07	08	09	10	11	12	
Events	$\Theta$	33	13	14	15	16	17	18	19	
Overview		34	20	21	22	23	24		26	
		35	27	28	29	30	31			
Next Event: 8/17/2018 2:20:00 I	PM, Remind	er: Event1								*

 Adapt the date / time / event text and save the event with the "ADD" button. Figure 3-4

Toolbox for HMI projects				≡
•••	Date/Time 8/17/2018 9:34 AM	Language <b>English</b>	••••	$\odot$
<b>Calendar view</b> August 2018 - September 2018	Date 17	. August	▽ 2018	
Events Create new event	Time 10	: 31		
Events	1 Event text Ev	ent 1		
Overview		ADD		
Next Event: 8/17/2018 10:31:00 A	M, Reminder: Event 1	](		*

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

.g				
Toolbox for HMI projects				≡
· · · · · · · · · · · · · · · · · · ·	ate/Time /17/2018 2:13 PM	Language English	••••	$\odot$
<b>Calendar view</b> August 2018 - September 2018	Date/Time	Text		^
Events	8/17/2018 2:20:00 Pl 12/31/2999 11:59:00			
Create new event	12/31/2999 11:59:00	PM		â
Events Overview	12/31/2999 11:59:00 12/31/2999 11:59:00			ش ش
	12/31/2999 11:59:00	PM		<b>₫</b> ~
Next Event: 8/17/2018 2:20:00 PM,	, Reminder: Event1			*

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.

Toolbox for HMI projects									
	Date/Time <b>B/17/2018 2:22 PM</b>		Langi Eng			ł	•••		2
Calendar view	<	>		Octo	ber		2018	В	
October 2018 - November 2018	CW	Mon	Tue	Wed	Thu	Fri	Sat	Sun	
Events	40	01	02	03	04	05	06	07	
Create new event	41	08	09	10	11	12	13	14	
Events	42	15	16	17	18	19	20	21	
Overview	43	22	23	24	25	26	27	28	
	44	29	30	31					
Event at: 8/17/2018 2:20:00 PM		E	vent	1				C	)K

### 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.

galo i i				
Toolbox for HMI projects				≡
Operator ••••	Date/Time 8/20/2018 9:43 AM	Language English	••••	$\odot$
Alarm				
Enable				
Set time	09 h <sup>:</sup> 43 min <sup>:</sup>	00 sec		
Reminder	Alarm 1			
			_	_
Alarm expired at: 2018-08-20 09:	43:00 Alarm 1		ОК	◆

### 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 2<sup>nd</sup> 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.
- Drag the elements (Template, Screen, Tag table) to the corresponding folder of the operator panel.
   Figure 4-3

Figure 4-3
▼ 🞵 LHmiToolbox
🕨 🔄 Types
▼ ☐ Master copies
01_PLC
▼ 102_HMI
Eg 00_Device
▼ 103_Tools
🕨 🔚 LHmiData
🕨 🔚 LHmiEng
🕨 🔚 LHmiMath
🕨 🔚 LHmiOper
🔻 🔚 LHmiTime
💌 📴 Alarm
▼ 100_Templates
🖳 TemplateGeneralStatusBar
▼ 1 01_Screens
LHmiTime_Alarm
D2_PopUpScreens
Barriel Contents
▼ 🔚 04_Tags
🖳 LHmiTime_Alarm
Es 05_Rules
🔻 🔚 06_CopyManual
btnAlarm

#### 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
▼ 🐙 LHmiToolbox
🕨 🔄 Types
Master copies
▼ 📴 01_PLC
Ei 00_Device
▼ 103_Tools
Ei 01_Blocks
🔻 🔚 LHmiTime
📒 LHmiTime_CommDB

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.
- 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.

Fig	gure 4-6						
▼	<ul> <li>Block title: "Main Program Sweep (Cycle)"</li> </ul>						
C	Comment						
•	Network 1: Time	functions - Alarm					
	Comment						
	Comment						
		<b>%DB5</b> "InstAlarm"					
		%FB4 "LHmiTime_Alarn	n"				
		EN	ENO				
	"LHmiTime_ CommDB". alarmHour	hour	elapsed •	"LHmiTime_ CommDB". alarmElapsed			
	"LHmiTime_ CommDB". alarmMinute	minute		"LHmiTime_ CommDB". alarmElapsedTim			
	"LHmiTime_ CommDB". alarmSecond	ela	psedTime ·	e			
	"LHmiTime_ CommDB". alarmReset	reset					
	"LHmiTime_ CommDB". alarmState	state					

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

Toolbox for HMI projects				≡
Operator ••••	Date/Time 8/20/2018 9:42 AM	Language English	••••	$\odot$
Alarm				
Enable				
Set time	09 h <sup>:</sup> 43 min <sup>:</sup>	00 sec		
Reminder	Alarm 1	AI	AI	
				*

- 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				
Toolbox for HMI projects				≡
Operator ••••	Date/Time 8/20/2018 9:43 AM	Language English	•••	$\odot$
Alarm				
Enable				
Set time	09 h <sup>:</sup> 43 min <sup>:</sup>	00 sec		
Reminder	Alarm 1			
	Alarma 1		OK	
Alarm expired at: 2018-08-20 09	:43:00 Alarm 1		ок	

# 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.

5					
Toolbox for HMI projects					≡
Operator ••••	Date/Time 8/20/2018 1:40 PM	Language English			$\odot$
Stopwatch				START	
	00:25			STOP	
Laps (5)				NEW LAP	
<ul> <li>Lap 1</li> <li>Lap 2</li> <li>00: 11</li> <li>00: 05</li> </ul>	Lap 3 Lap 4 00:04 00:03	Lap 5 00 : 00	>	CLEAR	
					*

#### 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 2<sup>nd</sup> 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.

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
--------	-----

▼ 💭 LHmiToolbox
🕨 🗐 Types
▼ 🛅 Master copies
▶ 📴 01_PLC
▼ 102_HMI
Device
▼ II 03_Tools
🕨 🔚 LHmiData
🕨 🔚 LHmiEng
🕨 🔚 LHmiMath
🕨 🔚 LHmiOper
🔻 🚼 LHmiTime
🕨 🛅 Alarm
🕨 🛅 Calendar
🔻 🔚 Stopwatch
▼ 📴 OO_Templates
TemplateGeneralStatusBar
▼ 1 O1_Screens
LHmiTime_Stopwatch
02_PopUpScreens
G3_Scripts
▼ Lags
👆 LHmiTime_Stopwatch
▼ 🔚 05_Rules
5 btnStopwatch

#### 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
▼ 🐙 LHmiToolbox
🕨 🔄 Types
Master copies
▼ 📴 01_PLC
Device
▼ 103_Tools
▼ 1 Blocks
🔻 📴 LHmiTime
🥃 LHmiTime_CommDB

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.
- Drag the function block "LHmiTime\_Stopwatch" to the "Program blocks" folder 8. of your PLC.



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.



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

Toolbox for HMI projects			≡
Operator Date/Time Language 8/20/2018 1:40 PM English	•••		$\odot$
Stopwatch	I	START	
Time 00:25 min sec		STOP	
Laps (5)		NEW LAP	
Lap 1         Lap 2         Lap 3         Lap 4         Lap 5           00:11         00:05         00:04         00:03         00:00		CLEAR	
			*

- 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					
Toolbox for HMI projects					≡
Operator	Date/Time 8/20/20	) 018 2:40 PM	Language English		$\odot$
Timer				START	
Remaining time	<b>00</b> :	<b>58</b> sec			
Duration		Reminder			
<b>1 min</b> 2 min		Reminder 1 mir	ı		
10 min 15 min				 RESET	
					•

#### 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 2<sup>nd</sup> 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".





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

-
JLHmiToolbox
🕨 🔄 Types
▼ ☐ Master copies
▶ 📴 01_PLC
▼ 📴 02_HMI
🕨 🔚 00_Device
<ul> <li>E 03_Tools</li> </ul>
🕨 🔚 LHmiData
🕨 🔚 LHmiEng
🕨 🔚 LHmiMath
🕨 🔚 LHmiOper
🔻 🔚 LHmiTime
🕨 📴 Alarm
🕨 🔚 Calendar
Stopwatch
Timer
Image: Contract of the second seco
TemplateGeneralStatusBar
▼ 1 O1_Screens
LHmiTime_Timer
C2_PopUpScreens
G3_Scripts
▼ 10 04_Tags
LHmiTime_Timer
C5_Rules
▼ 100_CopyManual
btnTimer

#### 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.



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.

- 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.

iigu	ire 6-5
- 🎵	LHmiToolbox
-	🗐 Types
	🕨 🔚 01_Template
	▼ E 03_Tools
	▼ 1 O1_Blocks
	🕨 🔚 LGF
	🕨 🛅 LHmiOper
	🔻 📴 LHmiTime
	🕨 🔚 Alarm
	🕨 🔚 Stopwatch
	🔻 🔚 Timer
	LHmiTime_Timer

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.





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.
- 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.

Operator	•••	Date/Time 8/20/2018 4	:04 PM	Language English	••••	0
	Time On		Time Off		State	e. 🔴
Monday	4:04:00 PM		4:06:00 PN	Л		
	8:00:00 PM		12:00:00 P	M		IMPORT
	7:00:00 AM		12:00:00 A	M		EXPORT
	4:00:00 PM		12:00:00 P	M		
	6:00:00 PM		12:00:00 P	M		
	12:00:00 PM		12:00:00 P	M		
	12:00:00 PM		12:00:00 P	M		COMFIRM

#### 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 2<sup>nd</sup> 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
▼ 💭 LHmiToolbox
▶ 🔄 Types
✓ ☐ Master copies
▶ 🖬 01_PLC
▼ 102_HMI
🕨 🔚 00_Device
▼ 103_Tools
🕨 🔚 LHmiData
🕨 📴 LHmiEng
🕨 📴 LHmiMath
🕨 📴 LHmiOper
🔻 🚼 LHmiTime
🕨 🔚 Alarm
🕨 🔚 Calendar
🕨 🔚 Stopwatch
🕨 🔚 Timer
💌 🔚 TimeSwitch
💌 🔚 00_Templates
TemplateGeneralStatusBar
1_Screens
LHmiTimeTimeSwitch
02_PopUpScreens
Ei 03_Scripts
5 LHmiTime_TimeSwitchNext
5 LHmiTime_TimeSwitchOff
5 LHmiTime_TimeSwitchOn
🛗 LHmiTime_vbsLoadFromFileSystem
🛗 LHmiTime_vbsNextTime
🛗 LHmiTime_vbsSaveToFileSystem
LHmiTime_vbsSetAll
▼ 🔁 04_Tags
LHmiTime_TimeSwitch
► E 05_Rules
▼ 100_CopyManual
🙃 btnTimeSwitch

#### 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.
- 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

Toolbox for H	MI projects						≡
Operator	•••	Date/Time 8/20/2018 4	1:04 PM	Language <b>English</b>			$\odot$
Monday	4:04:00 PM		4:06:00 PN	Λ	State	e. 🌒	-3
Tuesday	8:00:00 PM		12:00:00 P	M	_	IMPORT	
	7:00:00 AM	AI	12:00:00 A	M		EXPORT	
	4:00:00 PM	0	12:00:00 P	M			
	6:00:00 PM		12:00:00 P	M			
	12:00:00 PM		12:00:00 P	M			
	12:00:00 PM		12:00:00 P	M	V		
					(		*

#### 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 2<sup>nd</sup> 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
▼ 💭 LHmiToolbox
▼ ¬ Types
Image: Second
▶ E 03_Tools
OSTemplate
▼ ☐ Master copies
▶ 🖬 01_PLC
✓ ☐ 02_HMI
► E 00_Device
<ul> <li>✓ ☐ 03_Tools</li> </ul>
Limitata
<ul> <li>E LHmiEng</li> </ul>
► 📴 LHmiMath
<ul> <li>E LHmiOper</li> </ul>
▼ 🖬 LHmiTime
Alarm
🕨 🔚 Calendar
Stopwatch
<ul> <li>E Timer</li> </ul>
TimeSwitch
VordlTimeClock
<ul> <li>E: 00_Templates</li> </ul>
TemplateWorldTimeClock
▼ ☐ 01_Screens
LHmiTime_WordTimeClockLA
LHmiTime_WordTimeClockNewDelhi
LHmiTime_WorldTimeClockNuremberg
LHmiTime_WorldTimeClockReykjavik
<ul> <li>En 02_PopUpScreens</li> </ul>
▼ □ 03_Scripts
LHmiTime_vbsClockAmPm
LHmiTime_vbsClockHourHand
LHmiTime_vbsDaylightSavingTime
LHmiTime_vbsFindDayOfWeekOfMonth
LHmiTime_vbsTimezoneDisZone
LHmiTime_vbsTimezoneUTCTime
LHmiTime_vbsWorldTimeClock
5 LHmiTime_WorldTimeClock
✓ 1
LHmiTime_WorldTimeClock
► E O5_Rules
✓ iii 06_CopyManual
- btnWorldClocks

#### 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

	Name 🔺	Data type	Connection	PLC name	PLC tag
01	LHmiTime_ClockLA	LHmiTime_typeWorldTimeClock V 1.1.0	<internal tag=""></internal>		<undefined></undefined>
01	LHmiTime_ClockNewDelhi	LHmiTime_typeWorldTimeClock V 1.1.0	<nternal tag=""></nternal>		<undefined></undefined>
01	LHmiTime_ClockNuremberg	LHmiTime_typeWorldTimeClock V 1.1.0	<nternal tag=""></nternal>		<undefined></undefined>
01	LHmiTime_ClockReykjavik	LHmiTime_typeWorldTimeClock V 1.1.0	<nternal tag=""></nternal>		<undefined></undefined>
01	LHmiTime_ClockThirdLevelNav	Int	<internal tag=""></internal>		<undefined></undefined>
01	> LHmiTime_ClockNew <add new=""></add>	LHmitime_typeWorldTimeClock V 1.1	<pre></pre>		<undefined></undefined>

- 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.



- 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".

 Change the zone name to your new zone name. Figure 8-7

*		
	(	AI

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

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	
73       DSTActive = LHmiTime_vbsDaylightSavingTime(dateStart, timeStart, dateEnd, timeEnd)         74       74         75       SmartTags("LHmiTime_ClockNew.clockZoneTime") = LHmiTime_vbsTimezoneDisZone(SmartTags("LHmiTime_ClockNew.clockZoneTime") = ClockNew.clockZoneTime") = LHmiTime_vbsClockNmPm(SmartTags("LHmiTime_ClockNew.clockZoneTime"))         76       SmartTags("LHmiTime_ClockNew.clockZoneAmPm") = LHmiTime_vbsClockNmPm(SmartTags("LHmiTime_ClockNew.clockZoneTime"))	STActive)

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.
- 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					
Toolbox for HMI	projec	ts			≡
Operator	•••	Date/Time 8/22/2018 12:50 PM	Language English	•••	$\odot$
Chat					
Time Chat 12:50:21 PM Chat 12:50:05 PM Message: Hello Se	Client: Hell				<b>—</b>
					*

#### 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 2<sup>nd</sup> 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.

General Services	Services	
Screens Keyboa Good Ma	Remote control	Start Sm@rtServer
Alarms	Deed/usite to se	
User administration	Read/write tags	
Language & font		Operate as OPC server
OPC settings		
Tag settings		OPC DCOM Server
5 5		<ul> <li>OPC Unified Architecture Server</li> </ul>
		HTTP channel server

- 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

🐁 WinCC Runtime Advanced I	nternet 💌
Email Web Server Remote	
Tag authenticate	Tag access
O No authentication	Read/write
Authentication required	C Read only
	User Administration
	Start Web-Server
Close with Runtime	Close Web-Server
	OK Cancel

- 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

UserDatabase	-Edit	<b>×</b>			
User Manager Description Authorizations					
Administrator		<b>_</b>			
User Name:	Chat	New			
Password:	******	Apply			
Confirm Password:	******	<u>R</u> emove			
-					

Click "Apply" to confirm your entries.

10. Select the user "Chat" and go to the "Authorizations" tab. Figure 9-6

UserDatabase		<b>×</b>				
User Manager Description Authorizations						
Chat						
User Name:	Chat	New				
Password:	*****	Apply				
Confirm Password:	*****	<u>R</u> emove				

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

Figure 9-7

UserDatabase-Edit User Manager Description	Authorizations
Chat Chat	Add
SoapUser UserData	E Remove
UserAdministration RuntimeAccess	
	•

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

Attention	Note 🛛 🕅
Do you want to save your changes?	The web server needs a restart. Should this happen automatically?
Yes No	Yes No

#### 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 Connections Online Communication driver HMI time synchronization mode Station Partne Node Comm. Name HMI\_Connection\_1 SIMATIC S7 1500 Slave \$71500/ET200MP s... PLC 1 CPU 1516-3 PN/DP. -<Add new> > ..... Parameter Area pointer TP900 Comfort Station Interface ETHERNET Ŧ Web server on HMI device Address: http:// 💌 172.16.53.110 User name: Chat Password: \*\*\*\*\* Timeout: 10 s

#### 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

Devices		🔀 Discrete alarms	🔀 Analog alarms 🛛 🕞 G	ontroller alarms	System events	Alarm classes	1 Alarm groups
8 🔤 🛃							<b>3</b>
	Alarm classes						
2018-08-13_16-49_Toolbox_TemplateSuiteV15	Display name	Name	State machine	Log	Background colo Back	ground col Background c	olo Background colo
Add new device	San 1	Errors	Alarm with single-mode	<no log=""></no>	255, 0, 0 2	255, 0, 0 255, 255,	255 255, 255, 255
di Devices & networks		Warnings	Alarm without acknowle	«No log»	255, 255, 255 2	255, 255, 255	255 255, 255, 255
PLC_1 [CPU 1516-3 PN/DP]	🖼 S	System	Alarm without acknowle	<no log=""></no>	255, 255, 255 2	255, 255, 255	255 255, 255, 255
HMI [TP900 Comfort]	🚰 S7	Diagnosis events	Alarm without acknowle	<no log=""></no>	255, 255, 255 2	255, 255, 255 📃 255, 255,	255 255, 255, 255
Provice Auration	🖼 A	Acknowledgement	Alarm with single-mode	<no log=""></no>	255, 0, 0 2	255, 0, 0 255, 255,	255 255, 255, 255
gnostics	🔛 NA	No Acknowledgement			255, 0, 0 2	255. 0, 0 255. 255.	255 255, 255, 255
tings inagement	and the child news	Chat	Alarm without ackno 💌	etto log>	255, 0, 0 💌 2	255, 0, 0 255, 255,	255 255, 255, 255
Connections					1		

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
----------	------

Тос	Toolbox für HMI-Projekte						
	Bediener	•••	Datum/Uhrzeit 22.08.2018 12:45	Sprache <b>Deutsch</b>	•••	$\odot$	
Ch	at						
Cha Cha	it 12:45:03	Text Server: Hello ( Client: Hello S					
						*	

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

8							
Toolbox for HMI projects							
Operator ••••	Date/Time 8/22/2018 12:50 PM	Language English	••••	$\odot$			
Chat							
Time Text Chat 12:50:21 PM Server: He Chat 12:50:05 PM Client: Hel				- ,			
Message: Hello Server							
				•			

# 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							
Toolbox for HMI projects							
Operator	••••	Date/Time 8/23/2018 11:19 AM	Language English	•••		$\odot$	
Barcode							
Delivery note:	1245678						
Article:	SIMATIC HM	MI TP900 Comfort					
Article no.:	6AV2124-0	JC01-0AX0					
					PRINT		
						•	

### Figure 10-1

Figure 10-2

	Thursday, August 23, 2018				
Delivery note					
Deliver note no.:	1245678				
Article: SIMATIC HMI TP900 Comfort					
Article no.:	6AV2124-0JC01-0AX0				
	SIEMENS Ingenuity for life				
	SIEMENS				

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 2<sup>nd</sup> 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.

NoteClose 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<br/>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".



#### Note

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

#### Option 2

 Open the context menu of the barcode font and install the font with "Install". Figure 10-4

Name           Mame           manual_and_license_V1.2           Handbuch_und_Lizenz_Logitogo_V1.2		Date modified	Type Adobe Acrobat D Adobe Acrobat D	Size 211 KB 210 KB
		2/21/2008 8:27 AM		
		3/26/2008 5:16 PM		
Carle-39-Logitono		2.41.2012 9:26 AM	TrueType font file	375 KB
Co Co Preview		27 AM	TrueType font file	375 KB
🚱 Install	~0			

#### 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  $\langle Ctrl \rangle + \langle C \rangle$ .
- 2. Open the "Fonts" folder in the Control Panel.
- 3. Add the "\*.ttf" file of the font with the key combination  $\langle Ctrl \rangle + \langle V \rangle$ .

### 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 🔻 💭 LHmiToolbox Types Master copies 01\_PLC • 102\_HMI Device 🔻 🔚 03\_Tools 🔻 🔚 LHmiData AutoBackup 🕶 🔚 Barcode Templates 🛄 TemplateGeneralStatusBar 101\_Screens LHmiData\_Barcode 02\_PopUpScreens Image: Second 🛗 LHmiData\_vbsAddStartStopSign 🔻 📴 04\_Tags 👆 LHmiData\_Barcode Tel: 05\_Rules • 106\_CopyManual btnBarcode LHmiData\_ReportBarcode

#### 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.
- 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.



# 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.
- 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

Toolbox for HM	MI projects	5				≡
Operator	•••	Date/Time 8/23/2018 11:19 AM	Language English	•••		$\odot$
Barcode						
Delivery note:	1245678					
Article:	SIMATIC H	MI TP900 Comfort				
Article no.:	6AV2124-0	JC01-0AX0				
				E.	PRINT	
						*

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.

3				
Toolbox for HMI project	s			≡
Operator •••	Date/Time 8/23/2018 2:33 PM	Language English	••	$\odot$
<b>QR code</b> Example 105px x 105px	Input	www.siemens.com		
<b>QR code</b> Small resolutions	105px x 105px	GENERATE		
<b>QR code</b> Big resolutions	1030x x 1030x			
				•

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 2<sup>nd</sup> 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).
- 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 "Various Resolutions" 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.



#### 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".
- 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
```

 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 ").

- 8. Open the "LHmiData\_QRCodeExample" screen.
- 9. Connect the script "LHmiData\_vbsGenerateQRCode" to the "Press" event of the "GENERATE" button.

Figure 11-5

. igai e i i e					
btnGenerate [Button]		Q Properties	🗓 Info 🤢 🗓 Diagnostics	Plug-ins	• • •
Properties Animation	ns Events Texts				
	±∓⊟≣×				
Click					
Press	LHmiData_vbsGenerateQRCode				
Release	<add function=""></add>				

# 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.
- 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

Toolbox for HMI projects			
Operator ••••	Date/Time 8/23/2018 2:33 PM	Language English	$\odot$
<b>QR code</b> Example 105px x 105px	Input	www.siemens.com	
<b>QR code</b> Small resolutions	10557 × 10557	GENERATE	
<b>QR code</b> Big resolutions	105px x 105px		
			*

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.

Toolbox for HMI project	s							≡
Operator •••		e/Time 2 <b>4/2018 9:</b> 4	15 AM	Langua Englis		•••		$\odot$
<b>Send auto. email</b> Settings shifts		Shifts	_					
<b>Send man. email</b> Editor		Early From	Lat		Night		Settings	
Address directory Email addresses		To: Email	3:00:00	PM				
		earlyshi	ift@change	.me			OPE	N
Current email address: earlyshi	ft@cl	hange.me						•

#### Figure 12-1

#### Figure 12-2

Тос	olbox for HMI pro	ojects	s				≡
	Operator	••••	Date/Time 8/24/2018 9:	46 AM	Language English	•••	$\odot$
	<b>d auto. email</b> ings shifts		то	earlyshif	t@change.me		
Sen Edito	i <b>d man. email</b> or		Subject: Text:	Subject 1	1		
	<b>Iress directory</b> il addresses						
			SEND				
							*

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

Toolbox for HMI projects					≡
Operator ••••	Date/Time 8/24/2018 9:53 AM	Language <b>English</b>	•••		$\odot$
Send auto. email Settings shifts	earlyshift@change	.me		$\bigtriangledown$	8
<b>Send man. email</b> Editor					1
Address directory Email addresses	Comparison compl	eted			
	APPLY				
					*

## 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 2<sup>nd</sup> 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 1	2-4
----------	-----

General	SMTP Communication	
Services		
Screens	Server name:	smtp.gmail.com
Keyboard	Port:	587
Good Manufacturin 🖣	Name of sender:	PC_Station_1
Alarms	E-mail address	default@gmail.com
User administration		
Language & font	Login:	default@gmail.com
OPC settings	Password:	*****
Tag settings		Secure connection required (SSL)
< III >		Secure connection required (332)

#### 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.
FUIL	Sivil P server poit used for sending entail.
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 <sub>2</sub>
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).
- Open the folder "Master copies > 02\_HMI > 03\_Tools > LHmiData > Chat" of the library.



**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

LHmiData_EmailAutoShiftsSettings [Screen]	Properties	fo 🛛 🕄 Diagnostics	Plug-ins	
Properties Animations Ents Texts				
Cleared Startup Cleared Cleared Cleare	•			T

- 6. Open the Runtime settings of your HMI operator panel.
- Under "Services" enter your SMTP communication data (see chapter <u>12.2.4</u>) Alternatively, you can make the SMTP settings in the panel control panel. Figure 12-7

gure 12-7	
-----------	--

SMTP Communication	
Server name:	smtp.googlemail.com
Port:	587
Name of sender:	TP1200
E-mail address:	default@googlemail.com
Login:	default@googlemail.com
Password:	*****
	Secure connection required (SSL)

- 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

Recipes						
Name	Display name	Number 🔺	Version	Path	Туре	Ma.
🔄 LHmiData_recipesEmails	Email addresses	1	03.08.2017 12:36:38	\flash\106226404_Tools\Recipes	Limited 🔽	500
<add new=""></add>				30/256		
				(	$\Delta $ $( ) )$	
					$\sim$	

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

Recipes								
Name	Display name		Number 🔺	Version		Path	Туре	
📑 LHmiData_rocipesEmai	ls Email addresses		1	03.08.2017	12:36:38	\flash\106226404_Tools\Recipes	<ul> <li>Limited</li> </ul>	<b>.</b>
Elements	0			•				>
Name	Isplay name	Number	Emai Addres	s		ment 👝		
📑 Email early shift	earlyshift@change.me	1	earlyshift@c	hange.me		2		
🚽 Email late shift	lateshift@change.me	2	lateshift@ch	ange.me		AT		
📮 Email night chift	niahtchi#@chanaa ma	2	niahtehi4@e	hanna ma				
🚽 New email	new email	4	new@sieme	ns.com	New			
<a00 new=""></a00>	3					AI		

- 11. Open the "LHmiData\_EmailDirectory" screen.
- 12. Select the Save button and open the results of the button.

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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			
T.	oolbox for HMI projects		
ې	Operator Date:Tine 00000000000 12/31/20	Language 00 10:59 AM	··· 0
Se Se	end auto: email rtlings shifts		
Si	end man: email	> 100	r
btnExportEmailAddresses	[Button]		Diagnostics Plug-ins
Properties Animatic	ExportDe-     Recipe number/name     Data record number/name	1 0	
Deacti	File name Overwrite	\flash\106226404_Tools\R After confirmation	lecipes/record.csv
	Output status message	On	IA

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

Figure 12-11			
	Toolbox for HMI projects		
	Operator Date:Time 00000000000 12/31/2000	Language 10:59 AM	··· 0 e
	Send auto: email		
	Send man, email		
<	in a substantia de la constantia de la cons IIII	> 100%	▼
btnImportEmailAddress	ses [Button]	🖸 Properties 🚺 Info 🗳 Diagn	ostics Plug-ins 🗖 🗉 🗸
Properties Anim	t T E		
Rele	File name	\flash\106226404_Tools\Recipe	slrecord.csv
Acti	Data record number/name	0 After confirmation	
Deac	Overwrite Output status message	After confirmation On	(  A  ))
chunge	Processing status (Output, optional)	0.1	

Figure 12-12

# 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.

Toolbox for HMI p	voiects				=
Operator		ate/Time 3/24/2018 2:42 PM	Language English	•••	$\odot$
<b>Send auto. email</b> Settings shifts		Shifts			
<b>Send man. email</b> Editor		From 3:00:00	PM	Setting	S
Address directory Email addresses		To: 11:00:0 Email	0 PM		
		lateshift@change	.me	ę	OPEN 3
Current email address:	earlyshift@	change.me			

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

Toolbox for HMI projects	3	≡
Operator ••••	Date/Time 8/24/2018 2:49 PM English	
<b>Send auto. email</b> Settings shifts	lateshift@change.me	
<b>Send man. email</b> Editor	(1 Q Q)	5
Address directory Email addresses	■ Ready	
	APPLY 2	
		◆

#### 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

-			
Toolbox for HMI proje	cts		≡
Operator	• Date/Time 8/24/2018 3:03 F	Language PM English	⊘
Send auto. email Settings shifts	Shifts		
Send man. email	Early	Late Night	Settings
Editor	Save:	□ -1	
Address directory	Load:	<u>1</u> -2	
Email addresses	Set alarm:		
Current email address: lates	hift@change.me		*

#### 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

Toolbox for HMI projects						
Operator	•••	Date/Time 8/24/2018 3:14 PM	Language <b>English</b>	•••	$\odot$	
Send auto. email Settings shifts		то				
<b>Send man. email</b> Editor		Subject: Text:				
Address directory Email addresses						
		SEND				
					•	

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

		Date/Time 8/24/2018 9:4	16 AM	Language English	•••	$\odot$
<b>Send auto. email</b> Settings shifts		то	earlyshif	t@change.me		
<b>Send man. email</b> Editor	$\sim$	Subject: Text:	Subject <sup>•</sup>	1		
Address directory Email addresses						
		SEND				

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

Tooll	box for HMI project	s					≡
	Operator	•••	Date/Time 8/24/2018 3:30	PM	Language English		$\odot$
	<b>t backup</b> /2018 3:31:53 PM		Interval:	1	Hours	$\bigtriangledown$	
Sele 1 File	ected files		From:	8/24/:	2018 APPLY	3:31:53 PM	
Path C:\10	<b>)</b> 06226404_Tools					_	
Last b	oackup: 1/1/1999 12:	00:00 AN	Л				•

#### 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 LHmiToolbox Types 💌 🛅 Master copies E 01\_PLC 🔻 🔚 02\_HMI Device 🔻 🔚 03\_Tools 🔻 🔚 LHmiData 🔻 🔚 AutoBackup Templates 🔄 TemplateAutoBackup 🔄 TemplateGeneralStatusBar 01\_Screens LHmiData\_FcFileExplorer LHmiData FcFiles LHmiData\_FcNextBackup LHmiData\_FcPath D2\_PopUpScreens 🕶 🔚 03\_Scripts LHmiData\_vbsFcCalculateNextExecution LHmiData\_vbsFcCopyFiles LHmiData\_vbsFcFileSelectCopyFiles 🛅 LHmiData\_vbsFcInitializeTime 🖀 LHmiData\_vbsFcPreviousFolder 🚼 LHmiData\_vbsFcReadFilesOfFolder 🔠 LHmiData\_vbsFcSearch 🔠 LHmiData\_vbsFcShowFile 🔠 LHmiData\_vbsFcWriteFilePropertiesToTags 🕶 🔚 04 Tags 💺 LHmiData\_AutoBackup E 05\_Rules 🔻 🚼 06\_CopyManual 🐣 btnAutoBackup Image: Second 5 LHmiData\_FileCopy

#### 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.
- 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

	0							
	Toolbox f	for HMI project	s				≡	
	Oper		•••	Date/Time 8/24/2018 4:46 PM	Language English	•••	1 2	
	Path:	C:\10622640	04_Too	ls\				
	Filter:							5
1	C:\1062	26404_Tools\	24.08.2	018_15-31_LHmiView_F	ilterTable.csv			1
	C:\1062	26404_Tools\	24.08.2	018_16-31_LHmiView_F	ilterTable.csv			
	C:\1062	226404_Tools\@	events.	txt			3	
	C:\1062	226404_Tools\l	LHmiDa	ta_Filelist.txt				
	C:\1062	26404_Tools\	LHmiDa	ta_ShiftAddressesTimes	.txt			
	C:\1062	26404_Tools\	LHmiTir	me_Timeswitch.txt 📐				
	C:\1062	26404_Tools\	LHmiVi	ew_FileForTable.csv 🔪 🗴	C C	-	-4 5	
	C:\1062	26404_Tools\	LHmiVi	ew_FileList.txt	7/		$\sim$ $\parallel$	
	C:\1062	26404_Tools\	LHmiVi	ew_FilterTable.csv	/			
						~	ок х	
T				$\sim$				
	State: Fo	lder C:\ opened		= 6				
- 1				-				

#### 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).
- 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 🔻 💭 LHmiToolbox Types 💌 🛅 Master copies Image: Text Content of Content 02\_HMI Device Tools 🕨 🔚 LHmiData LHmiEng 🔻 🔚 LHmiMath 🔻 🔚 Calculator Templates 🛄 TemplateGeneralStatusBar 1\_Screens LHmiMath\_Calculator E: 02\_PopUpScreens Barrie Construction Construc 🔻 🔚 04\_Tags 🖳 LHmiMath\_Calculator E 05\_Rules • 106\_CopyManual btnCalculator

## 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".

 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

	Properties	Interface	An	nima	tions	Events	Texts		
ļ	282								
_					e			Pynamization	
	<ul> <li>Design</li> </ul>								
	fontNor	malDisplay	Ν	"	Siemens	Sans, 16px, sty	le=Bold		
	fontTop	Display	Ν	•••	Siemens	Sans, 13px			
	styleBa	ckground	Ν	•••	InScreen	Nav_Backgrour	nd		
	styleBa	ckgroundDisplay	Ν	•••	Faceplate	e_Background			
	styleNu	mbButtons	Ν	•••	Button [[	Default]			
	styleOp	erationButtons	Ν	"	Execute_	Action			
	101005								
	calculat	ion					_	LHmiMath_calculation	🗉 🖘

# 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.
- 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

Тос	Toolbox for HMI projects 🗧										
	Operator		Date/Time 8/21/2018 2:36 PM		Language <b>English</b>		••••		$\odot$		
Un	it converter										
Ter	nperature		+32.0 °F								
Ler	ngth		+1.00 inch								
Ena	able										
									*		

### 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

▼ 🞵 LHmiToolbox
🕨 🔄 Types
▼ 🛅 Master copies
• 1 01_PLC
▼ 102_HMI
Image: Boole to the second
▼ 1 O3_Tools
🕨 🔚 LHmiData
🕨 🔚 LHmiEng
🔻 🔚 LHmiMath
🕨 🔚 Calculator
🔻 🔚 UnitSwitch
Templates
🔄 TemplateGeneralStatusBar
Image: Comparison of the second se
LHmiMath_UnitSwitch
D2_PopUpScreens
• 🚼 03_Scripts
💌 📴 04_Tags
y LHmiMath_UnitSwitch
E 05_Rules
🔻 🔚 06_CopyManual
🔮 btnUnitSwitch

#### 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.

Properties Interface	Anima	tions Event	ts	Texts	
i2 🖻 🖿					
Name		Static value		vnamization	
▼ Design					
styleIOFields	N 🍤	I/O field [Default]			
styleIOFieldsUse	Ν ">		$\checkmark$		
* values				_	
systemUsed	Ν		l	.HmiMath_unitSystem	
temperatureCelsius	Ν		l	.HmiMath_temperatureCelsius	
temperatureFahrenheit	Ν		Ī	HmiMath_temperatureFahrenheit	E 🕢

#### 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 Properties Interface Animations Events Texts 12 🖻 🖿 namization Design N "> N "> styleIOFields I/O field [Default] styleIOFieldsUse 1 LHmiMath\_length\_inches len\_inches  $\sim$ M len\_mm Ν LHmiMath\_length\_mm systemUsed .HmiMath\_unitSystem 

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

Name		Static value	Dynamization	
<ul> <li>Properties_Faceplate</li> </ul>				
Value	Ν		LHmiMath_unitSystem	┋

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			
🔻 🞵 Project library			
🔻 🔄 Types			
📫 Add new type			
🕨 🔚 01_Template			
<ul> <li>E 03_Tools</li> </ul>			
D1_Blocks			
🕨 🔚 02_Types			
O3_Faceplates			
🔻 🔚 LHmiMath			
🕨 🔚 Calculator			
👻 🔚 UnitSwitch			
Internet fpLengthConversion			
🔤 V 1.1.0		Open	
🕨 🖭 fpTempCo		Edit type	
🕨 🔚 LHmiOper		Duplicate type	2
🕨 🔚 LHmiTime		Update	( 🔼 )
🕨 🔚 LHmiView		Assign version	
• E 04_Styles		Library managem	ent
OSTemplate	Х	Cut	Ctrl+X
Master copies	~~	Сору	Ctrl+C

2. Name the faceplate (for example, "Pressure\_Conversion").

If necessary, adjust the version and enter a comment for the version. Figure 15-6

Duplicate	type	_	×
0	Defi	ne the propert	ies for the new types.
	The s Spec	elected objects w	vill be stored as new types in the library.
		Name of type: Version: Author: Comment:	fpPressureConversion         1.0         Siemens Industry Online Support         V1.0.0: First Release
		A	OK Cancel

The type is stored in the project library.

3. Open the faceplate in edit mode.



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

Properties	Events	Tags	Scripts	Text lists	Graphic lists	Texts	Languages	
Name		0	ynamiz				Name	Туре
iopPressur							<ul> <li>Values</li> </ul>	
ioPressure	_psi						press_psi	
1							press_pascal	- Real
				•			systemUsed	- Bool
							Design	
<			>					
oress_psi [Inte	rface propert	y]			💁 Prope	rties 🚺	Info 🚺 🗓 Diagnostics	Plug-ins
Properties	Events	Texts						
		General						
General		c						
		Settir	igs 🔽					
				Name: p	ress psi			
			L					
				Data type.				×

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".

Properties	Animations	Events	Texts						
📑 Property list	Арр	earance							
Appearance	E	Background				Border			
			Co	lor: 255, 2	55, 255 💌		Width:	1	
Layout			Fill patte	ern: Solid			Style:	Solid	
Text format									
Flashing			Corner rad	ius: 0	2		Color:	204, 209, 215 🔻	
Limits						Bac	kground color:	89, 98, 102	
Styles/Designs	× 1	ext				-			
Miscellaneous									
Security			Г	_					
			U	nit: psi					
						2			
						( A )			

Repeat this step for the second I/O field.

7. Release the faceplate.

Figure 15-11	
▼ 🥠 Project library	
🔻 🔄 Types	
📑 Add new type	
D1_Template	
<ul> <li>E: 03_Tools</li> </ul>	
01_Blocks	
D2_Types	
▼ 103_Faceplates	
💌 🔚 LHmiMath	
🕨 🔚 Calculator	
💌 🔚 UnitSwitch	
fpLengthConversion	
▼ III fpPressureConversion	
📴 V 1.0.1 [in work]	Open
💷 V 1.0.0	
Interport Int	Edit type
🕨 🔚 LHmiOper	Duplicate type
🕨 🛅 LHmiTime	Check consistency
🕨 🔚 LHmiView	Release version
• 🔚 04_Styles	🔛 Discard changes and delete versior
OSTemplate	Mar all
# 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.
- Select a value of your choice for temperature and length. Figure 15-12

Toolbox for HMI pr	oject	5			=
Operator		Date/Time 8/22/2018 11:15 AM	Language English		$\odot$
Unit converter					
Temperature		+0.0 °C			
Length		+25.4 mm			
Enable		•			
					•

## 4. Confirm the "Enable" switch.

The I/O fields show the converted temperature and length values.

Figure 15-13				
Toolbox for HMI p	rojects			≡
Operator	Date/Time 8/21/2018 2:36 PM	Language English	•••	$\odot$
Unit converter				
Temperature	+32.0 °F			
Length	+1.00 inch			
Enable				
				*

# 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

Current Value:						Vew Va Кырилл						
ёй COPY	ц Ф	У	к в	e a	н	р	ш o	ц	ц з д	х ж	ъ Э	<
ESC	A.	я	ч	с	м	и	т	Ь	б	ю	•	• 123
SHIFT									<-	->		ENTER

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).
- 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.



## 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

LHmiOper_Keyt	boards [Screen]	Properties	🚺 Info	2 Diagnostics	Plug-ins	┛▤▾
Properties	Animations	Events Texts				
	1	∓ ⊟ <b>⊨</b> ×				
🛗 Loaded						
Cleared		<ul> <li>SetScreenKeyboardMod</li> </ul>	e			
		Mode		þff		- 10-
		<add function=""></add>				

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

LHmiOper_Keyl	boards [Screen]	<b>Q</b> Properties	<b>Info</b>	<b>Diagnostics</b>	Plug-ins	
Properties	Animations	Events Texts				
	1 ± ∓					
Loaded						
🛗 Cleared	-	SetScreenKeyboardMode				
		Mode		On	🗉 🔻 🝋	÷-
		<add function=""></add>				

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

Numeric keyboard	<sup>d:</sup>	000000000000000000000000000000000000000	00000000000
<		> 100%	▼
btn Open Numeric Keyboar	dlnvisible [B 🧟 Properties	Linfo Diagnostics	Plug-ins
Properties Animatio	ons Events Texts		
	±∓ ⊟ ≣ X		
Press	<ul> <li>LHmiOper_vbsOpenNumK</li> </ul>	(eyboard	
Release	TagName	valueNumericKeyboa	rd
Activate	<add function=""></add>		

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

#### Figure 16-10 **Properties** 🔄 Info **B** Diagnostics Plug-ins Properties Animations Events Texts 1 ∓ 🖻 🖹 X Activate Deactivate LHmiOper\_vbsCloseNumKeyboard -Input finished <Add function>

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

1	Sub LHmiOper_vbsOpenNumKeyboard(ByRef TagName)
2	
3	SmartTags("currentTagName") = TagName
4	
5	currentTagValue = SmartTags(TagName)
6	
7	bhowPopupScreen "LHmiOper_popupNumericKeyboard" 0, 104, miToogle, hmiAnimationOff, hmiMedium
8	
9	End Sub

## 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

			• • • • • • • • • • • • •		
	Current value:	00000000			
	New value:	00000000			
			• • • • • • • • • • • • •		
	6 7 8	9 C			
	1 2 3	4 5			
	ESC +/- 0	. OK			
	•				
٢	II	> 10	00%	▼	📵
fpLHmiOper_NumericKeyboard [Face	epl 國 Properties	🗓 Info 🛛 🗓	Diagnostics	Plug-ins	
·P=				9	
			J	5	
Properties Interface Anima		Texts			
	ations Events	Texts			
Properties Interface Anima	ations Events				
Properties Interface Anima	ations Events	Texts			
Properties     Interface     Anima       i2     Image: Comparison of the second style Background     Image: Comparison of the second style Background	ations Events	Texts			
Properties     Interface     Anima       i2     Image: Constraint of the style	ations Events	Texts			
Properties     Interface     Anima       ↓2     ►       Name        ✓ Design        styleBackground     N       styleButtons     N       styleDisplay     N	ations Events	Texts			
Properties     Interface     Anima       ↓2     ■     ■       Name     ■       ✓ Design     ■       styleBackground     N       styleButtons     N       styleDisplay     N       styleIofields     N	ations Events	Texts			
Properties     Interface     Anima       ↓2     ►       Name        ✓ Design        styleBackground     N       styleButtons     N       styleDisplay     N	ations Events	Texts			

**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

Regional Settings       Number       Currency       Time       Date         Appearance       Decimal symbol:       I       I       I         Positive:       123.456.789.00       No. of digits after decimal:       2       I         Negative:       -123.456.789.00       Digit grouping symbol:       -       -
Positive: 123.456.789.00 No. of digits after decimal: 2
No. of digits after decimal: 2
Negative: -123.456.789.00
Negative number format: -1.1 No. of digits in group: 3
Display leading zeros: 0.7 Negative sign symbol:
Measurement system: Metric Vist separators:

- 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

decimalSepara	torNumeric	Keyboard [	HMI 國 P	Properties	L Info	<b>Diagnostics</b>	∎∎▼
Properties	Events	Texts					
		Values					
General		Values					
Settings		values					
Range			Start value:	0			
Linear scaling							
Values							

## 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

Toolbox for HMI projects				≡
Operator	••••	Date/Time 8/27/2018 3:26 PM	Language English	 $\odot$
On-Screen keyboards	s			
Numeric keyboard:				OPEN
QWERTY keyboard:				
Language dependant keyboard:				OPEN
Cyrillic keyboard:				OPEN
AZERTY keyboard:				OPEN
				*

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

Toolbox for HMI projects				≡
Operator •••	Date/Time 8/27/2018 3:26 PM	Language English	•••	$\odot$
	Current value: New value: 6 7 8 1 2 3	12 9 C 4 5 . OK		
				*

# 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.



## 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



- 7. Open the folder "Master copies >> 01\_PLC > 03\_Tools > 01\_Blocks > LHmiOper" of the library.
- Drag the data block "LHmiOper\_CommDB" to the "Program blocks" folder of your PLC.
   Figure 17.5

Figure 17-5
▼ 🎵 LHmiToolbox
🕨 🔄 Types
▼ ☐ Master copies
▼ 101_PLC
Device
▼ 100 O3_Tools
▼ 1 O1_Blocks
🔻 🔚 LHmiOper
📒 LHmiOper_CommDB

### 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

▼ 🖵 LHmiToolbox
▼ 🔄 Types
🕨 🔚 01_Template
O3_Tools
01_Blocks
🕨 📴 LGF
🔻 📴 LHmiOper
ExtScreensaver
🔻 🔚 HomeButton
🔻 💽 LHmiOper_DelayButton

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.



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.

	<u> </u>		
	LHmiOper_Chec		
UInt —	screenNo	inactive	— Bool
UInt —	— objectNo	xPosition —	Int
Time —	— delayTime	yPosition —	— Int
Int —	— xPositionMax		
Int —	— yPositionMax		

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 ▼ 💭 LHmiToolbox 🕨 🔄 Types 💌 🛅 Master copies • 101\_PLC 🕶 🛅 02\_HMI Device Tools 🕨 📴 LHmiData LHmiEng 🕨 🔚 LHmiMath 💌 🔚 LHmiOper CheckRadioBox 🕨 🔚 HomeButton Keyboards MovePopUpScreen 🕶 🔚 Screensavers ▼ 📴 00\_Internal Templates 01\_Screens LHmiOper\_IntScreensaver D2\_PopUpScreens 🕶 🔚 03\_Scripts 🛗 LHmiOper\_vbsActivateIntScreensaver 🛗 LHmiOper\_vbsSetBrightnessScreensaver 🕶 📴 04\_Tags 🔩 LHmiOper\_IntScreensaver 🕶 📴 05\_Rules • 106\_CopyManual E 07\_Scheduled tasks 5 LHmiOper\_ExecuteIntScreensaver 5 LHmiOper\_ScreenChangeIntScreensaver

## 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



- 5. Open the "LHmiOper\_IntScreensaver" screen.
- 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
▼ 💭 LHmiToolbox
▶ जि Types
▼ 🛄 Master copies
▶ 🖬 01_PLC
▼ 102_HMI
▶ 🖬 00_Device
▼ 103_Tools
🕨 🔚 LHmiData
🕨 🔚 LHmiEng
E LHmiMath
🔻 🔚 LHmiOper
🕨 🔚 CheckRadioBox
🕨 🔚 HomeButton
🕨 🛅 Keyboards
MovePopUpScreen
Screensavers
🕨 🔚 00_Internal
▼ 10 O1_External
▼ 100_Templates
len TemplateGeneralStatusBar
▼ 100 01_Screens
LHmiOper_ExtScreensaver
LHmiOper_Screensavers
D2_PopUpScreens
▼ 103_Scripts
🔚 LHmiOper_vbsActivateExtScreensaver
🛗 LHmiOper_vbsSetBrightnessScreensaver
▼ E 04_Tags
🍇 LHmiOper_ExtScreensaver
Es 05_Rules
🔻 🔚 06_CopyManual
the btnScreensaver
Tel: 07_Scheduled tasks
5 LHmiOper_StopExtScreensaver

## 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
▼ 💭 LHmiToolbox
🕨 🔄 Types
Master copies
▼ 101_PLC
Device
O3_Tools
▼ 1 O1_Blocks
🔻 🔚 LHmiOper
🗧 LHmiOper_CommDB

## 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

fpSwitch1 [Faceplate instance] [fpSwitch V 1.0.0]				<b>Properties</b>	🗓 Info 👔 🗓 Diagnostics	Plug-ir	15	
	Properties Interface	Anima	tions Events	Texts				
	Name		Static value	Dynamization				
	<ul> <li>Properties_Faceplate</li> </ul>							
	Value	N		LHmiOper_ActivateE:	dScreensaver			

#### 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"

Name	Communication driver	HMI time synch	nronization mode	Station		Partner	N
HM_Connection_	1 SIMATIC \$7 1500	Slave	-	S71500/E	200MP s	PLC_1	(
< TO							
Param	ea pointer 📐 🧑						
Active		PLC tag	Access mode		Address		
	Coordinati	<undefined></undefined>	<symbolic ac<="" td=""><td>cess&gt;</td><td></td><td></td><td></td></symbolic>	cess>			
	Date/time	<undefined></undefined>	<symbolic ac<="" td=""><td>cess&gt;</td><td></td><td></td><td></td></symbolic>	cess>			
	Job mailbox	<undefined></undefined>	<symbolic ac<="" td=""><td>cess&gt;</td><td></td><td></td><td></td></symbolic>	cess>			
	Data record	<undefined></undefined>	<symbolic ac<="" td=""><td>cess&gt;</td><td></td><td></td><td></td></symbolic>	cess>			
<							
Global area pointe	er of HMI device						
Connection		PLC tag			Access m	ode	Addr
concennees		consenie av			symbol	c access>	
HMI_Connection_1	Screen number	LHmiOper_CommDB	B.areaPointerExtSscre	ensaver 🗌	symbol	c access>	
				N	symbol	c access>	
				$\rightarrow$	-0		
				( )	AII))		

- 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.



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.
- Wait for 1 minute without operation. The internal screen saver opens. Figure 18-11

	Internal Screens	aver
	<b>SIEMENS</b> Ingenuity for life	

- 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				
Toolbox for HMI projects				≡
Operator •••	Date/Time 8/28/2018 11:29 AM	Language <b>English</b>	••••	$\odot$
External Screensaver				
Enable				
				*

- 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.

i igule 15 i						
Toolbox for HMI proje	cts					
Operator	•••	Date/Time 9/3/2018 11:1	4 AM	Language English	•••	$\odot$
Check-/Radiobox		Number	4	Text 1	1	
Checkbox		Value		Text 2	2	
Check-/Radiobox		Value	9	Text 3	3	
Radiobox				Text 4	4	
						*

## Figure 19-1

## Figure 19-2

Toolbox for HMI proje	cts					≡
Operator	•••	Date/Time 9/14/2018 3:2	7 PM	Language English	•••	$\odot$
Check-/Radiobox Checkbox		Number	5	box1 box2		
Check-/Radiobox		Value	1	box3 box4		
huisson				box4 box5		
						*

## **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
▼ 🞵 LHmiToolbox
🕨 🔄 Types
▼ ☐ Master copies
Image: Book and Bo
▼ 🔚 02_HMI
Device
▼ 103_Tools
🕨 🛅 LHmiData
🕨 🔚 LHmiEng
🕨 🔚 LHmiMath
🔻 🔚 LHmiOper
🔻 🔚 CheckRadioBox
💌 🔚 00_Templates
🔄 TemplateCheckRadioBox
Image: The second se
LHmiOper_Checkbox
📃 LHmiOper_Radiobox
D2_PopUpScreens
Big 03_Scripts
▼ 🔚 04_Tags
🖳 LHmiOper_CheckRadioBox
E: 05_Rules
▼ 🔚 06_CopyManual
🚁 btnCheckRadiobox

## 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



- 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

CheckBox [Faceplate insta	nce] [L	HmiOper_fpCheck	(Bo 🔍 Properties 🔰 🗓 Info 👔 🗓 Diagnostics 👘 Plug-ins 👘 🖡
Properties Interface	Anim	ations Events	5 Texts
Name 🔺		Static value	Dynamization
▼ Design			
bgCheckbox	Ν	255, 255, 255	
borderColor	N "	204, 209, 215	
font	N	Siemens Sans, 17p	x
fontColor	N "	39, 51, 56	
▼ Labels			
txtCheckbox01	N	Text 1	
txtCheckbox02	Ν	Text 2	
txtCheckbox03	Ν	Text 3	
txtCheckbox04	Ν	Text 4	
txtCheckbox05	Ν	Text 5	
txtCheckbox06	Ν	Text 6	
txtCheckbox07	Ν	Text 7	
txtCheckbox08	Ν	Text 8	
▼ Values			
numberOfCheckBoxes	Ν		LHmiOper_checkboxNumber
returnValue	N		LHmiOper_checkboxValue

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

Toolbox for HMI projects				≡
Operator •••	Date/Time 9/3/2018 11:14 AM	Language English	•••	$\odot$
Check-/Radiobox Checkbox		Text 1		
<b>Check-/Radiobox</b> Radiobox	Value 9	Text 3 Text 4		
				*

- 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.
- Select a radio button of your choice. The associated decimal value is displayed in the "Value" I/O field.



# 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 popup 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.



## 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
c
▼ 🦳 LHmiToolbox
▶
Master copies
▶ 🖬 01_PLC
▼ 102_HMI
Co_Device      Co_Tools
▼ 103_Tools
E LHmiData
<ul> <li>Eu LHmiEng</li> <li>Eu LHmiMath</li> </ul>
<ul> <li>▼ E LHmiOper</li> <li>▶ E CheckRadioBox</li> </ul>
Ea HomeButton
Ea Keyboards
<ul> <li>Es Neyboards</li> <li>Es MovePopUpScreen</li> </ul>
<ul> <li>Inductopopulation</li> <li>Inductopopulation</li> </ul>
<ul> <li>Ea 00_Intripletes</li> <li>Ea 01_Screens</li> </ul>
✓ ☐ 02_PopUpScreens
LHmiOper_popupMovePopUps
LHmiOper_popupPosition
▼ ☐ 03_Scripts
🔚 LHmiOper_vbsMovePopUpScreen
▼ 1 04_Tags
LHmiOper_MovePopUpScreen
E 05_Rules
+ btnMovePopUp
btnShowMovePopUp

## 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.

 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



 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.



#### 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.
- Select the button and open the "Events" of the button. Open the "Click" event. Figure 20-5

btnMovePopU	p [Button]	Roperties	🗓 Info 追 🗓 Diagnostics 🛛 Plug-ins 📰 🖃
Properties	Animations	Events Texts	
	1	∓⊟≣×	
Click			
Press		▼ SetTag	
Release		Tag (Output)	LHmiOper_selPopup
Activate		Value	1
Deactivate		▼ SetTag	
Change		Tag (Output)	LHmiOper_popupWidth
		Value	320
		▼ SetTag	
		Tag (Output)	LHmiOper_popupHeight
		Value	266
		<ul> <li>ShowPopupScreen</li> </ul>	
		Name of the screen	LHmiOper_popupPosition
		X coordinate	324
		Y coordinate	110
		Display mode	Toggle
		Animation	Off
	4	Animation speed	Medium
		<add function=""></add>	

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.



 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

0		
LHmiOper_popu	pMovePopUps [Pop-up screen] 🖳 Properties 🚺 Info 🌒 🖫 Diagnostics Plug-ins 🖬 🖶	-
Properties	Animations Events Texts	
📑 Property list	Layout	_
General	Circ.	
Layers	Size	
Layout	Width: 320	
Scroll bar	Height: 266	
Deactivate	▼ SetTag	
Change	Tag (Output) LHmiOper_popupWidth	
	Value 320	
	▼ SetTag	
	Tag (Output) LHmiOper_popupHeight	
	Value 266	

## 10. Optional

Adjust the x and y coordinate for calling the pop-up screen "LHmiOper\_popupPosition".

Figure 20-8

	<ul> <li>ShowPopupScreen</li> </ul>	
	Name of the screen	LHmiOner_popupPosition
	X coordinate	324
	Y coordinate	110
	Display mode	Toggle
	Animation	Off
4	Animation speed	Medium
	<add function=""></add>	

#### 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.

Move Pop-up screens
NOTE
Press the arrow button to move th Pop-up screen.
<b>+</b>
CANCEL

3. Press the move button. A pop-up screen with the nine moving options opens. Figure 20-10

Move Pop-up screens
NOTE
Press the arrow button to move th Pop-up screen.
CANCEL
4. Press a button of your choice.





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

Figure 20-12

Toolbox for HMI pr	ojects						≡
Operator							
	0			Move Pop	-up screei	ns	
More tools	Home button	Screensaver			NO	TE	
				Press the a Pop-up scr		on to move	e th
			I		<del>4</del>	•	
Seg. Control	Notes	File explorer			CAN	CEL	
0		00000000					4
Waiting view	% Percentage view	Bit monitor		lcon fo	ont	Rotation	/

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

Toolbox for HMI projects	;						Ξ	
Operator		/Time <b>/2018 3:24</b>	I PM	Language English		••••	6	0
Segmented Control Variable division		0 %	20 %	40 %	60 %	80 %	100 %	
Segmented Control Fixed division		Value 6 Ste	eps:	60 %				
		0 %	10 %	20 %	30 %	40 %	50 %	
		60 %	70 %	80 %	90 %	100 %		
		Value 11 S	teps:	90 %				
								~

### 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

Figure 21-3
▼ 🞵 LHmiToolbox
🕨 🔄 Types
▼ ☐ Master copies
01_PLC
▼ 🔁 02_HMI
Device
▼ 103_Tools
🕨 🛅 LHmiData
🕨 🛅 LHmiEng
LHmiMath
▼ 🔚 LHmiOper
E CheckRadioBox
HomeButton
Keyboards
Ea MovePopUpScreen
Screensavers
▼ 🔚 SegmentedControl
▼ 🔁 00_Templates
TemplateSegmentedControl 1 01_Screens
LHmiOper_SegmentedControlFixed
LHmiOper_SegmentedControlNariable
Campoper_segmentedcontrolvanable      Ear 02_PopUpScreens
<ul> <li>E 03_Scripts</li> </ul>
<ul> <li>✓ Ei 04_Tags</li> </ul>
LHmiOper_SegmentedControl
E 05_Rules
✓ Ea 06_CopyManual
÷ btnSegmentedControl

### 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 ▼ 💭 LHmiToolbox 🕶 🔄 Types 🕨 📴 01\_Template Tools Blocks • 102\_Types • E 03\_Faceplates 🕨 🔚 LHmiMath 🕶 🛅 LHmiOper 🕨 🔚 CheckRadioBox 🕨 🔚 Keyboards 🕶 🛅 SegmentedControl LHmiOper\_fpSegment6 LHmiOper\_fpSegment11 LHmiOper\_fpSegmentMinMax6 LHmiOper\_fpSegmentMinMax11

- 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

LHmiOper_fpSegment	🔍 Properties 🔤 🗓			
Properties Inter	face Anima	tions Events	Texts	
12 E3 🖿				
Name 🔺		Static value	Dynamization	
Design				
Labels				
Values				

- **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

0							
.HmiOper_fpSegment6_1 [Fa	iceplate in	istance]	] [LHmiOpe	r_fpSegme	nt6 V 1.1.0]	<b>Properties</b>	🗓 Info 🤢 🗓 Dia
Properties Interface	Animati	ions	Events	Texts			
12 🖻 🖿							
Name 🔺	2	Static valı	ue	Dynamizat	ion		
Design							
Labels	_	_	_	_			_
▼ Values	N				_resultFixDiv6Steps		
tagResult	14			LHMOPE	resultrixblv6steps		
pSegmentMinMax11 [Facep	late instar	ncel [] F	lmiΩner fn	SegmentM	inMax11 V 1 1 0]	Reporties	
			1				
Properties Interface	Animati	ions	Events	Texts			
Name 🔺	2	Static valı	ue	Dynamizat	ion		
A Dester							
<ul> <li>Values</li> </ul>							
MAX					_maxSegControl		
MIN	N.				_minSegControl		
tagResult	Ν			LHMIOper	_resultVarDiv11Steps		

### 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

LHmiOper_fpSegment6_1 [Fa	ceplate	instance]	[LHmiOper_fpSegment6			
Properties Interface	Anima	ations	Events Texts			
12 E E						
Name		Static value	Dynamization			
Design						
▼ Labels						
txtButton01	N 🍡	0 %				
txtButton02	Ν "	20 %				
txtButton03	Ν "	40 %				
txtButton04	Ν "	60 %				
txtButton05	Ν "	80 %				
txtButton06	Ν "	100 %				
y values						

Figure	21-8
--------	------

roperties Interface		٩n	ima	tions	Events	Texts
•						
Name				Static valu	Je	Dynamization
Design						
<ul> <li>Labels</li> </ul>						
txtButton01	h	I.	•••	0 %		
txtButton02	h	1	•••	10 %		
txtButton03	h		•••	20 %		
txtButton04	h	I.	•	30 %		
txtButton05	h	I.	•••	40 %		
txtButton06	h	I.	•••	50 %	$\sim$	
txtButton07	h	I.	•••	60 %		
txtButton08	h		•••	70 %		
txtButton09	h	I.	•	80 %		
txtButton10	h		•••	90 %		
txtButton11		4	•••	100 %		

### 9. **Optional**

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

Figure 21-9

fpSegmentMinMax11 [Facepl	ate inst	tance] [LHmiOper_	_fpSegmentMinMa 🖪
Properties Interface	Anima	tions Events	Texts
Name		Static value	Dynamization
▼ Design			
objects Buttons Active	Ν "	.btnExecuteAction	
objectsButtonsInactive	Ν "	.btnCancelAbortClo	
Values			

### Figure 21-10

fpSegment11Steps [Faceplate instance] [LHmiOper_fpSegment11 V 1.1.0]						
Properties Interface	Anima	tions Events		Texts		
i2 🖻 🖿						
Name		Static value	D	namization		
▼ Design						
objectsButtonsActive	Ν "	.btnExecuteAction				
objectsButtonsInactive	Ν "	.btnCancelAbortClo	\			
Labels						
Values						

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

### 21.3 Operation

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



Note

Figure 21-12

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).

Toolbox for HMI projects 9/4/2018 9:57 AM English Segmented Control 0 % 20 % 40 % 60 % 80 % 100 % Variable division M Value 6 Steps: 80 % Segmented Control Fixed division 4 10 % 20 % 30 % 40 % 50 % 70 % 3 90 % 100 % 60 % Value 11 Steps: 70 4

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# 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

Toolbox for HMI projects									
Operator •••	Date/Time 9/4/2018 10:55 AM	Language English	•••	$\odot$					
<b>Notes</b> Overview	Overview notes								
Overview	No. All Notes								
	0 Note 0								
Notes	1 Note 1								
Add new note	2 Note 2								
	3 4								
Notes									
Save / Load	5 Text 5								
Saveriedad	6								
	7 Text 7								
				•					

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

### Figure 22-2

Toolbox for HMI projects								
Operator ••••	Date/Time 9/4/2018 10:55 AM	Language English	•••	$\odot$				
Notes Overview	Add new note							
Notes Add new note		te 0						
Notes Save / Load		ADD						
				*				

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.

<b>F</b> : 00.4
Figure 22-4
▼ 💭 LHmiToolbox
▶ 🔄 Types
▼ 🛅 Master copies
▶ 🔚 01_PLC
▼ 🔁 02_HMI
E 00_Device
Image: Comparison of the second se
🕨 🔚 LHmiData
🕨 🛅 LHmiEng
🕨 🔚 LHmiMath
🕨 🔚 LHmiOper
🕨 🔚 LHmiTime
The Item The
BitMonitor
ChangeBackground
FileExplorer
Gauges
▼ 🔚 Notes
▼ E 00_Templates
- TemplateNotes
▼ 📴 01_Screens
LHmiView_NotesAddNotes
LHmiView_NotesSaveLoad
LHmiView_NotesTable
E 02_PopUpScreens
▼ 103_Scripts
LHmiView_vbsCopyToCurrentNote
LHmiView_vbsCopyToNotes
LHmiView_vbsReadNotesFromDisk
LHmiView_vbsWriteNotesToDisk
▼ 📴 04_Tags
🖳 LHmiView_Notes
D5_Rules
▼ 📴 06_CopyManual
<sup>ی</sup> btnNotes

### 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

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.
- 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

Toolbox for HMI projects							
Operator	•••		e/Time <b>/2018</b>	8 10:55 AM	Language <b>English</b>	•••	$\odot$
<b>Notes</b> Overview				rview notes			
			No. 0	All Notes Note 0	M		
Notes	N		1	Note 1			
Add new note			2	Note 2			
Notes	U		3 4				
Save / Load			5	Text 5			
			7	Text 7			
	_	_	_				
							•

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

Toolbox for HMI projects					
Operator ••••	Date/Time Language 9/4/2018 10:55 AM English	⊘			
Notes Overview	Add new note				
Notes Add new note	New Note Note 0				
Notes Save / Load	ADD				
		*			

Note

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

Toolbox for HMI projects							
Operator ••••	Date/Time 9/4/2018 10:56 AM	Language English	•••		$\odot$		
Notes Overview	Save / load notes						
Notes Add new note	C:\106226404_Tool	s\LHmiView_Notes	.txt	_			
Notes Save / Load	Save:			OPE	EN		
					•		

- 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.

Toolbox for HMI projects	\$						≡
Operator		te/Time 4/2018 10:56	5 AM	Language <b>English</b>			$\odot$
<b>Notes</b> Overview		Save / loa					
Notes Add new note	C:\106226404_Tools\LHmiView_Notes.txt						
Notes Save / Load	9	Save: Load:	<b>₽</b>				N Y
				0			•

### 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.



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).
- 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:".

Gauge_ControlledComplexity_200x200px_0100scale [Graphic I/O field]							
Properties	Animations	Events	Texts				
Property list	General						
General	Process						
Appearance	Flocess						
Layout		Tag: HMI	_Tag_1				
Limits		PLC tag:	-				
Miscellaneous							
C ite -	A	ddress:					

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.

Gauge_Controll	edComplexity_2	00x200	px_noScale_	Group [
Properties	Animations	Event	s Texts	
→ ←				
🔤 🌍 German (Ge	ermany)	Eng	glish (United St	ates)
Unit		Un	it	
Unit		Un	it	
P9		P9		
P8		P8		
P7		P7		
P6		P6		
P5		P5		
P4		P4		
P3		P3		
P2		P2		
P10		P1	0	
P1		P1		
PO		PO		

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:".

Properties	Animations	Events	Texts
📑 Property list	dCompl	General	
Layout			
Miscellaneous		Process	
Security		Та	ag: processvalue
Gauge_Controlle	dCompl	PLC ta	ag:
<ul> <li>Scale_Actual_Val</li> </ul>	lue_CC2		-
General		Addre	\$\$:
Appearance			
	- *	-	

# 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.



### 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).
- 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



 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

GaugeVariant2	[Group]			Properties	🔄 🗋 In	fo 追 🛚	Diagnostics	Plug-ins	
Properties	Animations	Events	Texts						
📑 Property list		General							
Layout Miscellaneous	ſ	Process				Forma	t		
Security		Tag:					Display format:	Decimal	-
cirBackground2	· · · · · ·	PLC tag:	_		~	0	Decimal places:	0	
▶ Gauge2		Address:			- (		Field length:	3	
▼ ioTag2 General						$\nabla$	Leading zeros:		
Appearance	-	Туре					Format pattern:		-
Characteristi	cs ,	Modou	Output		-				
Layout	-	Mode.	Output					1	~
								$\langle$	

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 🖳 🖳 Properties 🚺 Info 👔 🖞 Diagnostics 🛛 Plug-ins 🔤 🖃 🥆 Properties Animations Events Texts 📑 Property list General Layout Miscellaneous Process Maximum scale value: 100 Security cirBackground2 Gauge2 General Tag for maximum: ... Process tag: ~ . PLC tag Appearance Design Layout Text format Limits/Ranges M Address: Minimum scale value: Tag for minimum: Label Styles/Designs Title: TagName [unit] Miscellaneous ▶ ioTag2 2 AI Scale gradation: 25

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# **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.



### 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
▼ 💭 LHmiToolbox
🕨 🔄 Types
▼ 🛅 Master copies
▶ 101_PLC
▼ 🔁 02_HMI
🕨 🔚 00_Device
💌 🔚 03_Tools
🕨 🔚 LHmiData
🕨 🔚 LHmiEng
🕨 🔚 LHmiMath
🕨 🛅 LHmiOper
🕨 🔚 LHmiTime
🔻 🔚 LHmiView
🕨 🔚 BitMonitor
🕨 🔚 ChangeBackground
🔻 🔚 FileExplorer
Ei 00_Templates
🔄 TemplateGeneralStatusBar
Image: Comparison of the second se
LHmiView_FileExplorer
O2_PopUpScreens
LHmiView_popupFEDelete
LHmiView_popupFENewFolder
LHmiView_popupFERename
💌 🔚 03_Scripts
🛗 LHmiView_vbsFECreateFolder
🛗 LHmiView_vbsFEDelete
🛗 LHmiView_vbsFEMove
LHmiView_vbsFEPreviousFolder
🛗 LHmiView_vbsFEReadFilesOfFolder
🛗 LHmiView_vbsFERename
🛗 LHmiView_vbsFESearch
LHmiView_vbsFEShowFiles
🛗 LHmiView_vbsFEWriteFilePropertiesToTags
▼ 📴 O4_Tags
🖳 LHmiView_FileBrowser
05_Rules
🗢 📴 06_CopyManual
btnFileExplorer

### 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.

 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						
LHmiView_FileExplorer [	Screen]	Rroperties	Linfa 1 Dia	gnostics	Plug-ins	
Properties Animat	ions Events Texts	dFilesOfFolder	Folder			
	LHmiView_vbsFEWrite     index <li><add function=""> </add></li>	eFileProperties To Tag	; index	AI		

- 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

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.
- 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

Toolbox for HMI projects							
Oper	ator	••••	Date/Time 9/4/2018 4:04 PM	Language English	•••		$\odot$
Path: Filter:	C:1					+	<b>~</b> ,
C:\01_A C:\02_A					^	Q,	
_	26404_Tools					►*	前
C:\PerfL	ogs				_		<ul> <li>Image: A second s</li></ul>
C:\Progr	am Files am Files (x86)					La constante da	X
C:\Users	-						x
C:\Wind	ows						
State:							*

### 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.

Note

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

Figure 25-5

Toolbox for	HMI projects				
Operato	or •••	Date/Time 9/4/2018 4:09 PM	Language English	••••	$\odot$
Filter: C:\01_Arcl C:\02_Arc C:\106226 C:\FLASH C:\PerfLog C:\Program C:\Program	hives 6404_Tools gs m Files m Files (x86) GE CARD SD				
State: Folder	r C:\ opened				

4. Create a new folder (1) in the current directory with the New button. The popup 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

Toolbo	Toolbox for HMI projects							
O	perator	•••	Date/Time 9/4/2018 4:32 PM	Language <b>English</b>	•••		$\odot$	
Path: Filter:	C:\106226	_				<b>₽</b> α	►,	
C:\10 C:\10	-	s\LHmiDa s\LHmiDa		txt			1 1	
C:\10 C:\10 C:\10		s\LHmiVi s\LHmiVi s\LHmiVi	ew_FileForTable.csv ew_FileList.txt ew_FilterTable.csv				*	
	6226404_Tool		ew_Notes.txt \New Folder 1 created		~		×	

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.



### Result

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

Figure 25-9

Toolbox f	Toolbox for HMI projects							
Ope	rator	Date/Time 9/4/2018 4:34 PM	Language English	•••		$\odot$		
Path:	C:\106226404	_Tools\			<b>+</b>	<u>~</u> .		
Filter:								
		w Folder renamed		^	Q			
	26404_Tools\ev					_		
	-	miData_Filelist.txt miData_ShiftAddressesTim	os tyt		∕=*	Ô		
	-	miTime_Timeswitch.txt	CJ.DA		<b>P</b> .			
	-	miView_FileForTable.csv						
C:\1062	26404_Tools\LH	miView_FileList.txt			L.	X		
C:\1062	26404_Tools\LH	miView_FilterTable.csv				00		
C:\1062	26404_Tools\LH	miView_Notes.txt				x		
State: Fold	der renamed in: C:\	106226404_Tools\New Folder	renamed			•		

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

Figure 25-10

Toolbox for HMI pro	jects				≡
Operator	•••	Date/Time 9/4/2018 5:10 PM	Language <b>English</b>		$\odot$
Path: C:\10622 Filter:	26404_Too	ls\			← <b>≥</b> ,
C:\106226404_To C:\106226404_To C:\106226404_To	ols\events. ols\LHmiDa	txt ata_Filelist.txt		^	Q. 🛋 💼
C:\106226404_To	ols\LHmiTir ols\LHmiVi	ata_ShiftAddressesTime me_Timeswitch.txt ew_FileForTable.csv ew_FileList.txt	ss.txt		2
C:\106226404_To C:\106226404_To		ew_FilterTable.csv ew_Notes.txt		~	×
State: File C:\1062264	04_Tools\Ne	ew Folder renamed copied	d		*

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

Toolbox for HMI projects							
			•••	Date/Time 9/4/2018 5:15 PM	Language <b>English</b>	•••	$\odot$
	:\1062 :\FLAS :\New :\PerfL :\Progr	rchives 26404_Tools H Folder renar ogs ram Files ram Files (x8 AGE CARD SI	ned 6)			*	
Stat	te: File	/ Folder C:\10	6226404_	_Tools\New Folder renamed	pasted		•

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
--------	-------

Toolbox for HMI projects				≡
	Date/Time 9/4/2018 5:21 PM	Language <b>English</b>		$\odot$
Path: C:\ Filter:				÷ ►,
C:\01_Archive	Delete file / folder		<u>^</u>	٩
C:\02_Archives C:\106226404_Tools	NOTE			
C:\FLASH	Do you really want to delete the file / folde			
C:\New Folder renamed C:\PerfLogs			_	
C:\Program Files C:\Program Files (x86)	APPLY		)	
C:\STORAGE CARD SD	CANCEL			x
C:\Users			Ľ	^
State:				*

### 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							
Toolbox for HMI projects							
Operator ••••	Date/Time 9/4/2018 5:25 PM	Language <b>English</b>	•••	$\odot$			
Path: C:\ Filter:				÷ •			
C:\01_Archive C:\02_Archives			^	٩			
C:\106226404_Tools C:\FLASH				►* Î			
C:\PerfLogs C:\Program Files			_	<b>E</b>			
C:\Program Files (x86) C:\STORAGE CARD SD			_	<b>₽</b> . X			
C:\Users				×			
C:\Windows							
State: File / folder deleted: C:\Ne	w Folder renamed			•			

 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

Ope	rator	•••	Date/Time 9/4/2018 5:27 PM	Language English	•••		$\odot$
Path:	C:\106226	6404_Too	ls\			<b>4</b> -1	┣=.
Filter:							
C:\1062	26404 Tool	s\New Fo	lder renamed			Q	
	26404 Tool			N .	^		
C:\1062	26404_Tool	ls\LHmiDa	ata_Filelist.txt				俞
C:\1062	26404_Tool	ls\LHmiDa	ata_ShiftAddressesTim	es.txt 🤇 🍋 🌶		-*	
C:\1062	26404_Tool	ls\LHmiTi	me_Timeswitch.txt				
C:\1062	26404_Tool	ls\LHmiVi	ew_FileForTable.csv				
C:\1062	26404_Tool	ls\LHmiVi	ew_FileList.txt			≓.	X
C:\1062	26404_Tool	ls\LHmiVi	ew_FilterTable.csv				00
C:\1062	26404_Tool	ls\LHmiVi	ew_Notes.txt				
					~		

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

Toolbox for HMI projects						
Op	perator	•••	Date/Time 9/4/2018 5:31 PM	Language English	••••	$\odot$
Path: Filter:	C:\Toolbox					← <b>►</b>
C:\Too	olbox archive\e	vents.tx	1		^	Q ====================================
			2			
					~	
State: Fi	le / Folder C:\106	5226404_	_Tools\events.txt pasted			•

11. Press the "X" button to close the File Explorer. Figure 25-16

Toolbox f	or HMI projects				≡
Oper	rator •	••• Date/Time 9/4/2018 5:31 PM	Language English	•••	$\odot$
Path: Filter: C\ <b>Tool</b> t	C:\Toolbox arcl				← <b>►</b> , Q
State: File	/ Folder C:\106226	6404_Tools\events.txt pasted		~	

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

Toolbox for HM	/Il projects						≡
Operator	•••	Date/Time <b>9/5/2018</b>	9:08 AM	Language <b>English</b>	i i	•••	$\odot$
Archive path:	D:\Toolbox arch	nive\Data_lo	g_10.csv				OPEN
	Tag name		Date and Time		Value	Valid	
	ArchiveTag_1		16.02.2016 1	3:34:49	+0	1	~
	ArchiveTag_2		16.02.2016 1	3:34:51	+0	1	
	ArchiveTag_1		16.02.2016 1	3:34:51	+0	1	
	ArchiveTag_2		16.02.2016 1	3:34:53	+0	1	
	ArchiveTag_1		16.02.2016 1	3:34:53	+0	1	~
Filter table						Position 1	/ 86
Filter string:							<b>+</b>
							•

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

Figure 26-2

Toolbox for HMI projects								
Operator	•••	Date/Time <b>9/5/2018</b>	9:09 AM	Language English	·	•••	$\odot$	
Archive path:	D:\Toolbox archive\Data_log_10.csv						OPEN	
	Tag name		Date and Time		Value	Valid		
	ArchiveTag_2		16.02.2016 1	3:34:51	+0	1	~	
	ArchiveTag_2		16.02.2016 1	3:34:53	+0	1		
	ArchiveTag_2		16.02.2016 1	3:34:55	+0	1		
	ArchiveTag_2		16.02.2016 1	3:34:57	+0	1		
	ArchiveTag_2		16.02.2016 1	3:34:59	+0	1	~	
Filter table						Position 1	/ 43	
Filter string:	ArchiveTag_2						<b>+-</b> -	
							*	
#### 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
▼ 💭 LHmiToolbox
▶ 🔄 Types
▼ □ Master copies
▶ 📴 01_PLC
▼ 102_HMI
Image:
O3_Tools
🕨 🔚 LHmiData
🕨 🔚 LHmiEng
🕨 🔚 LHmiMath
🕨 🔚 LHmiOper
E LHmiTime
▼ 🔚 LHmiView
Ea BitMonitor
ChangeBackground
FileExplorer
E Gauges
Notes
Ea PercentageView
TableView
▼ 🔚 00_Templates
🔄 TemplateGeneralStatusBar
▼ 📴 01_Screens
LHmiView_TableViewTable
C2_PopUpScreens
▼ 🔁 03_Scripts
LHmiView_vbsFilterArchiveTableView
LHmiView_vbsFormatArchiveFile
LHmiView_vbsReadArchiveToHmiTags
▼ 104_Tags ■ LHmiView_TableView
Controlled a deview
✓ 📴 05_Kules
<ul> <li>btnArchiveTableView</li> </ul>
- DurArenive lable view

#### 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.

Figure 26-4

- 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.

Toolbox for HN	Al projects						≡
Operator	•••	Date/Time 9/5/2018	9:39 AM	Language English	·	•••	$\odot$
Archive path:							OPEN
	Tag name		Date and Time		Value	Valid	
					+0	0	
					+0	0	
					+0	0	
					+0	0	~
					+0	0	
Filter table						Position 1	/ 1
Filter string:							<b>+-</b> 1
							•

 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

Select file	×
D:\Toolbox archive	
Data_log_10.csv	
Name: D:\Toolbox archive	
Type: *. <sub>CSV</sub>	
← ►, ►, EQ. OK	X

#### 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							
Toolbox for H	VII projects						≡
Operator	•••	Date/Time <b>9/5/2018</b>	9:08 AM	Language English	•		$\odot$
Archive path:	D:\Toolbox arcl	nive\Data_lo	g_10.csv				OPEN
	Tag name		Date and Time		Value	Valid	
	ArchiveTag_1		16.02.2016 1		+0	1	~
	ArchiveTag_2		16.02.2016 1		+0	1	
	ArchiveTag_1		16.02.2016 1			1	
	ArchiveTag_2				+0		~
	ArchiveTag_1		16.02.2016 1	3:34:53	+0	1	
Filter table						Position 1	186
Filter string:							-
					_	_	*

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.

	•••	Date/Time <b>9/5/2018</b>	9:09 AM	Language <b>English</b>		••	6
		3/3/2010	5.05 AW	English			
Archive path:	D:\Toolbox arch	nive\Data_lo	g_10.csv				OPEN
			-				
	Tag name		Date and Time		Value	Valid	
	ArchiveTag_2		16.02.2016 1	3:34:51	+0	1	~
	ArchiveTag_2		16.02.2016 1	3:34:53	+0	1	
	ArchiveTag_2		16.02.2016 1	3:34:55	+0	1	
	ArchiveTag_2		16.02.2016 1	3:34:57	+0	1	
	ArchiveTag_2		16.02.2016 1	3:34:59	+0	1	~
Filter table						Position 1	/ 43
Filter string:	ArchiveTag_2						4-1

#### Note

Figure 26-7

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

Figure 27-1

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.

5			 
Toolbox for HMI projects			≡
Operator •••	Date/Time 9/5/2018 10:11 AM	Language English	
	Changing background		
	NOTE		
	Press on the button "CANCEL" or on the bac behind the Pop-Up scree to deactivate the dark ba		
	CANCEL		
			*

#### 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
▼ 💭 LHmiToolbox
▶ 🔄 Types ▼ 🛅 Master copies
• 1 01_PLC
▼ 102_HMI
E: 00_Device
▼ 103_Tools
🕨 🛅 LHmiData
🕨 🛅 LHmiEng
🕨 🛅 LHmiMath
🕨 🛅 LHmiOper
🕨 📴 LHmiTime
The Item The
BitMonitor
ChangeBackground
Ei 00_Templates
🔤 TemplateGeneralStatusBar
▼ 📴 01_Screens
btnDarkBackground
btnLightBackground
LHmiView_ChangeBackground
C2_PopUpScreens
• E 03_Scripts
▼ 🔚 04_Tags
🖳 LHmiView_ChangeBackground
▼ Es O5_Rules
▼ 🔚 06_CopyManual
btnChangeBackground

#### 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

	and fillent and					1000 -			1	
btnDarkBackgr						🔄 🔍 Properti	es 🛛 🛄 Info	🔒 🗓 Diagnostics	Plug-ins	
Properties	Animations	Events	Texts							
📑 Property list	Lay	out								^
General		osition & siz					Fit to size			
Appearance	P P	osition & siz	e		-		Fit to size			
Fill pattern		X: 0	\$	₩ 800	•	$\sim$	Fit object	t to contents		
Design		Y: 0	•	I 480						
Layout						AL)	Text margi	ns		
	-									

- 7. Open your pop-up screen.
- 8. Open the results of your pop-up screen.
- 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					
LHmiView_popupChange	Background [Pop-up screen]	<b>Q</b> Properties	🗓 Info 追 🗓 Diagnostics	Plug-ins	
Properties Animati	ons Events Texts				
Loaded					
Cleared	▼ SetBit				
	Tag (Input/output)	L	HmiView_ActivatePopUpBackground		
	<add function=""></add>				

 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			
LHmiView_popupChang	geBackground [Pop-up screen]	🔍 Properties 🚺 Info 👔 🖳 Diagnostics 🛛 Plug-ins 🖃 🗏	•
Properties Anima	tions Events Texts		
	± ∓ ⊟ ≣ ×		
Loaded			
Cleared	<ul> <li>ResetBit</li> </ul>		
	Tag (Input/output)	LHmiView_ActivatePopUpBackground	
	<add function=""></add>		

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

Toolbox for HMI projects				≡
Operator	Date/Time 9/5/2018 10:11 AM			
	Changing background			
	NOTE Press on the button "CANCEL" or on the bac behind the Pop-Up scree to deactivate the dark b			
	CANCEL			
				•

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				
Toolbox for HMI projects				≡
Operator ••••	Date/Time 9/5/2018 12:32 PM	Language English	••••	$\odot$
Waiting view Circle				
Waiting view Rectangles				
Waiting view Text		Q		
				•

#### Rectangles - "WaitingViewRectangles" screen object group

#### Figure 28-2

Toolbox for HMI projec	ts				≡
Operator	•••	Date/Time 9/5/2018 12:32 PM	Language English	•••	$\odot$
Waiting view Circle					
Waiting view Rectangles					
Waiting view Text					
					•

#### Writing - "WaitingViewText" screen object group

Figure 28-3				
Toolbox for HMI projects				≡
	Date/Time 9/5/2018 12:32 PM	Language English		$\odot$
Waiting view Circle				
Waiting view Rectangles		Looding	•	
Waiting view Text	Loading .		•	
				*

#### 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

Figure 28-4
▼ 💭 LHmiToolbox
🕨 🔄 Types
Master copies
01_PLC
▼ 102_HMI
E 00_Device
Image: Tools
🕨 🔚 LHmiData
🕨 🔚 LHmiEng
🕨 🔚 LHmiMath
🕨 🔚 LHmiOper
🕨 🔚 LHmiTime
🔻 🔚 LHmiView
🕨 🔚 BitMonitor
🕨 🔚 ChangeBackground
FileExplorer
🕨 🔚 Gauges
Notes
🕨 🔚 PercentageView
TableView
💌 🔚 WaitingView
💌 🔚 00_Templates
🔄 TemplateWaitingView
▼ 1 O1_Screens
gfxioWaitingViewCircle
grpWaitingViewRect
~~~ grpWaitingViewTxt
LHmiOper_WaitingViewCircle
LHmiOper_WaitingViewRectangles
LHmiOper_WaitingViewText
Ei 02_PopUpScreens
03_Scripts
💌 🔚 04_Tags
🖳 LHmiView_WaitingView
Es 05_Rules
🔻 🔚 06_CopyManual
btnWaitingView

#### 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

e [Graphic I/O field]	🖳 Properties 🚺 Info	o 🚺 🗓 Diagnostics 🛛 Plug-ins 📄
ations Events Texts		
General		
Process	Contents	
Tag: LHmiView_waitingAnima	tion 🔳	Graphics list: LHmiView_LoadingCircle 🔳 🥕
PLC tag:	5	
	ations Events Texts General Process Tag: LHmiView_waitingAnima	ations Events Texts General Process Tag: LHmiView_waitingAnimation

#### 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

LHmiOper_WaitingViewText [Screen]			
Properties Animat	ions Events Texts		
100 Loaded			
Cleared	▼ SetBit		
	Tag (Input/output)	LHmiView_waitingActive	

#### 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

LHmiOper_WaitingVie	wText [Screen]	📴 Properties 🚺 Info 🚯 😨 Diagnostics 🛛 Plug-ins 💷 🗖 🖉
Properties Anim	nations Events Texts	
	±∓ ⊟ <b>≡</b> ×	
idi Loaded		
Cleared	▼ SetBit	
	Tag (Input/output)	LHmiView_waitingActive
	<ul> <li>SimulateTag</li> </ul>	
	Tag (Input/output)	LHmiView_waitingAnimation
	Cycle	1
	Maximum value	15
	Minimum value	0
	Value	1
	Add function>	

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

LHmiOper_WaitingView	Text [Screen]	💁 Properties 🚺 Info 👔 🖳 Diagnostics Plug-ins 💷 🖃 🗸
Properties Animations Events Texts		
	±∓ ⊟≣ ×	
Loaded		
Cleared	<ul> <li>SetTag</li> </ul>	
	Tag (Output)	LHmiView_waitingActive
	Value	0
	<add function=""></add>	

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

# 28.3 Operation

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					
Toolbox for HMI proj	jects				≡
Operator	•••	Date/Time 9/5/2018 12:32 PM	Language English	•••	$\odot$
Waiting view Circle		)			
Waiting view Rectangles			0		
Waiting view Text					
					*

- 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

3					
Toolbox for HMI	projects				
Operator	•••	Date/Time 9/5/2018 12:32 PM	Language English	••••	$\odot$
Waiting view Circle					
Waiting view Rectangles					
Waiting view Text					
					*

Note

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				
Toolbox for HMI projects				≡
Operator ••	Date/Time 9/5/2018 2:15 PM	Language English	•••	$\odot$
Percentage view Circle				
Percentage view Ring		33 %		
				*

#### 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).
- 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

Figure 29-3
▼ 🞵 LHmiToolbox
▶ 🔄 Types
🔻 🛅 Master copies
▶ 📴 01_PLC
▼ 102_HMI
E 00_Device
Image: Tools
🕨 🔚 LHmiData
🕨 🔚 LHmiEng
🕨 🔚 LHmiMath
🕨 🔚 LHmiOper
🕨 🔚 LHmiTime
🔻 🔚 LHmiView
BitMonitor
ChangeBackground
FileExplorer
Gauges
Notes
PercentageView
E: 00_Templates
- TemplatePercentageView
▼ 📴 01_Screens
LHmiView_PercentageViewCircle
LHmiView_PercentageViewRing
C2_PopUpScreens
• 🔚 03_Scripts
▼ 🔚 04_Tags
LHmiView_PercentageView
► DS_Rules
▼ 🔚 06_CopyManual
* btnPercentageView

#### 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

-
🔻 💭 LHmiToolbox
▼ 🔄 Types
🕨 🔚 01_Template
Image: Tools
Image: Blocks
Ei 02_Types
▼ 103_Faceplates
🕨 🛅 LHmiMath
🕨 🛅 LHmiOper
🕨 🛅 LHmiTime
🔻 🛅 LHmiView
🕨 🛅 BitMonitor
🔻 🔚 PercentageView
LHmiView_fpCirclePercentageView
LHmiView_fpRingPercentageView

- 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

fpCirclePercentageView [Fag	ceplate i	nstance] [LHmiView	/_fpCirclePerc 📴 Properties	🗓 Info 🚺 🗓 Diagnostics	Plug-ins	
Properties Interface	Anima	tions Events	Texts			
12 🖻 🖿						
Name 🔺		Static value	Dynamization			
▼ Design						
objectlOfields	N 🆖	Regular (center)				
<ul> <li>Values</li> </ul>					1	
percentage	Ν		LHmiView_percentage			
			ļ		1	
				Ň	$\sim$	
fpRingPercentageView [Face	nlate in	stance] [  HmiView	_fpRingPercen 🔯 Properties	🗓 Info 🔒 📱 Diagnostics		
	1	1c		Diagnostics		
Properties Interface	Anima	tions Events	Texts			
12 🖻 🖿						
Name 🔺		Static value	Dynamization			
▼ Design						
objectBackground	N 🎐	Faceplate_Circle_State				
objectlOfield	N 🎐	Regular (center)				
▼ Values					-	
percentage	Ν		LHmiView_percentage			
			L		1	
					$\sum$	

#### 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

fpCirclePercentageView [Fac	ceplate instance] [LHmiView	_fpCirclePerc 📴 Properties	🗓 Info 🔒 🌄 Diagnostics	Plug-ins
Properties Interface	Animations Events	Texts		
Nama .	Ctatic value	Dynamization		
<ul> <li>Design</li> <li>objectlOfields</li> </ul>	N 🎐 Regular (center)			
percentage	Ν	LH AI centage	II	
fpRingPercentageView [Face	eplate instance] [LHmiView_	fpRingPercen 📴 Properties	🗓 Info 🔒 🗓 Diagnostics	Plug-ins 🗖 🗖 🤝 🗸
Properties Interface	Animations Events	Texts		
Nama .	Static value	Pynamization		
<ul> <li>Design</li> <li>objectBackground</li> <li>objectlOfield</li> </ul>	Faceplate_Circle_State       P       Regular (center)			
percentage	Ν	LF AI centage	I	

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

# 29.3 Operation

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  $\ensuremath{\text{I/O}}$  field.



Note

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.





# **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 Toolbox for HMI projects ... 9/5/2018 4:29 PM English Byte tag input: **Bit monitor** 35 (Maximum value 255) Byte (USINT) - 8 Bit Bit 3 Bit 7 Bit 6 Bit 5 Bit 4 Bit 2 Bit 1 Bit O **Bit monitor** Word (UINT) - 16 Bit **Bit monitor** Double (UDINT) - 32 Bit

#### Bit monitor data type "Word"

Figure 30-2									
Toolbox for HMI projects									≡
Operator	Date/Time 9/5/2018 4:2	9 PM		nguage n <b>glish</b>		•••			$\odot$
<b>Bit monitor</b> Byte (USINT) - 8 Bit	Word tag (Maximur		ue 6553	5) 35	00				
Bit monitor	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0	
Word (UINT) - 16 Bit	D# 15		0	Bit 12	Dia 11	Dia 10		<b>D</b> th O	
<b>Bit monitor</b> Double (UDINT) - 32 Bit	Bit 15	Bit 14	Bit 13	BIL 12	Bit 11	Bit 10	Bit 9	Bit 8	
									*

#### Bit monitor data type "Double"

#### Figure 30-3 Toolbox for HMI projects 9/5/2018 4:30 PM English Double tag input: **Bit monitor** 546465454 (Maximum value 4294967295) Byte (USINT) - 8 Bit Bit 7 Bit 6 Bit 5 Bit 4 Bit 3 Bit 2 Bit 1 Bit O **Bit monitor** Word (UINT) - 16 Bit Bit 15 Bit 14 Bit 13 Bit 12 Bit 11 Bit 10 Bit 9 Bit 8 Bit monitor Double (UDINT) - 32 Bit Bit 23 Bit 22 Bit 21 Bit 20 Bit 19 Bit 18 Bit 17 Bit 16 Bit 31 Bit 30 Bit 29 Bit 28 Bit 27 Bit 26 Bit 25 Bit 24 +

#### **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

Entry ID: 106226404, V5.0, 02/2019

## **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.



#### 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.

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

Figure 30-5
▼ 🖵 LHmiToolbox
▼ 🔄 Types
🕨 🔚 01_Template
▼ 103_Tools
D1_Blocks
D2_Types
• E 03_Faceplates
🕨 🔚 LHmiMath
🕨 🔚 LHmiOper
🕨 🔚 LHmiTime
🔻 🔚 LHmiView
💌 🔚 BitMonitor
LHmiView_fpByteBitMonitor
LHmiView_fpDoubleBitMonitor
LHmiView_fpWordBitMonitor

- 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

fpByteBitMonitor [Faceplate	inst	ance	e] [LHmiView_fpBy	teBit№	Ionitor V	Roperties	🚺 Info	<ol> <li>Diagnostics</li> </ol>	Plug-ins	
Properties Interface	A	nima	ations Events	Te	xts					
12 🖻 🖿										
Name 🔺			Static value		Dynamizat	ion				
▼ Design										
objectCircles		200	State							
objectTextFields		"	Text field [Default]							
▼ Values										
inputByteTag					LHmiView	_byteTag				
outputBitStructureByte						_byteStructure				
visibilityTag	Ν				LHmiView	_byteViewVisibility				
									AI	
fpWordBitMonitor [Faceplate	e ins	stan	ce] [LHmiView_fpV	VordBi	itMonitor	Properties	🚺 Info 🛛	🔒 ዄ Diagnostics	Plug-ins	
Properties Interface	A	nima	ations Events	Te	xts					
Name 🔺			Static value		Dynamizat	ion				
▼ Design										
objectCircles	Ν	~	State							
objectTexts	Ν	"	Text field [Default]							
<ul> <li>Values</li> </ul>				- 1	_					
inputWordTag					LHmiView					
outputBitStructureW						_wordStructure				
visibilityTag	Ν				LHmiView	_wordViewVisibility		E		
									AI	
fpDoubleBitMonitor [Faceplat	te ir	istai	nce] [LHmiView_fp	Doub	leBitMon	<b>Q</b> Properties	🔄 🛄 Info (	<ol> <li>Diagnostics</li> </ol>	Plug-ins	
Properties Interface	A	nima	ations Events	Te	xts					
Name 🔺			Static value		Dynamizati	on				
▼ Design										
objectCircles	Ν	"	State							
objectTexts	Ν	"	Text field [Default]							
✓ Values							_			
inputDoubleTag						doubleTag				
outputBitStructureDo						doubleStructure				
visibilityTag	Ν				LHmiView	_doubleViewVisibili	ty	I		
									AI	

#### 7. Optional

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

Figure 30-7

fpByteBitMonitor [Faceplate	instance] [LHmiView_fpByt	eBitMonitor V 🧟 Properties	🗓 Info 🔒 🖁 Diagnostics	Plug-ins 🗖 🗆 🥆
Properties Interface	Animations Events	Texts		
12 🖻 🗮				
Manaa	Constanting to a	Dynamization		
▼ Design		1-,		
objectCircles	N 🍟 State			
objectTextFields	N 🎐 Text field [Default]			
* values				
inputByteTag		byte Tag		
outputBitStructureByte		byteStructure		
visibilityTag	N	ew_byteViewVisibility	■ • •	

fpWordBitMonitor [Faceplate	e instance] [LHmiView_fpWordBit	Monitor 🧟 Properties	🗓 Info 🔒 🖁 Diagnostics	Plug-ins
Properties Interface	Animations Events Tex	ts		
Mana	Canadia condicia	Dynamization		
▼ Design				
objectCircles	N 🌱 State	-		
objectTexts	N 🌇 Text field [Default]			
✓ values		AI)		
inputWordTag	(	wordTag		
outputBitStructureW		ew_wordStructure		
visibilityTag	N	LHmiView wordViewVisibility	1 -m-	



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

# 30.3 Operation

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 Toolbox for HMI projects  $\overline{\checkmark}$ ••• ••• English 9/5/2018 4:29 PM Byte tag input: **Bit monitor** 35 (Maximum value 255) 2 Byte (USINT) - 8 Bit A۱ Bit 7 Bit 6 Bit 5 Bit 4 Bit 3 Bit 2 Bit 1 Bit O **Bit monitor** Word (UINT) - 16 Bit 3 Bit monitor Double (UDINT) - 32 Bit •

Note

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).



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).



# **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

•		
Rotation		
Rotation	German	English
Settings Select Save Run	1	
Rotation		
⊂ left   ● right		
Angle of rotation	360 °	
Number of steps	60 Steps (	6 Deg 👻
O Number of angle steps		-

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





#### 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.
- Open Microsoft PowerPoint. Click on "Developer". If the "Developer" tab is not displayed, you must first make it visible (see <u>Microsoft Office Support entry</u>).
- 3. Click on "Visual Basic".

Figure 31-3

Visual Basic	

- 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



Add-Ins

- 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



 Click on "Add-Ins > HMI GraphicList Designer > Rotation" to start the tool. Figure 31-6

	raphicList Designer *
🐴 Rot	ation

- 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

Rotation		X
Rotation	German	English
Settings Select Save Run	1	
Rotation		
⊖left		
Angle of rotation	360 °	
Number of steps	60 Steps (	6 Deg 🔻
O Number of angle steps		~

 In the "Select" window, select the objects you wish to rotate and click the ">" arrow. Figure 31-8

Rotation		X
Rotation	German	English
Settings Select	Save Run	
located objects STAT_Transparen STAT_Background STAT_WhiteCircle	;	

- 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 <u>108716692</u>.

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  $0^{\circ}$ .

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.



#### 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

Rotation		×				
Rotation	German	English				
Settings Select Save Run						
Cleft right						
Angle of rotation	357 °					
• Number of steps	119 (3°)	•				
C Number of angle steps		-				

#### 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.

Toolbox for HMI projects							
		Date/Time 9/6/2018 10:36	AM English	•••	$\odot$		
< >	Icon color						
Image: http://www.end/content/action         Image: http://www.end/content/action           61697         61698	X         Ø           61699         61700	Image: Markow Control         Image: Markow Controw Control         Image: Markow Control <th>Sec         C           61703         61704</th> <th>61705         61706</th> <th></th>	Sec         C           61703         61704	61705         61706			
Image: Constraint of the second sec	Image: Constraint of the second sec	Image: blue state         Image: blue state           61711         61712	Image: 61713         61714	61715         61716	Flash. colo		
Image: Constraint of the second sec	61719         61720	<b>222</b> 61721 61722	61723 61724	Image: bit with the second s			
					*		

#### 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.

HEX	ASCII	Character	HEX	ASCII	Character	HEX	ASCII	Character
F101	61697	¥\$	F102	61698	†‡†	F103	61699	×
F104	61700	¢	F105	61701	ĺ₩.	F106	61702	
F107	61703	Ŷ,	F108	61704	ť	F109	61705	
F10A	61706	iti	F10B	61707		F10C	61708	
F10D	61709	<b>h</b> C	F10E	61710	۵.	F10F	61711	٣
F110	61712	Ç <b>Q</b> ;	F111	61713	***	F112	61714	
F113	61715	100%	F114	61716	0	F115	61717	°
F116	61718	O M	F117	61719	Š	F118	61720	e
F119	61721		F11A	61722	e e e e e e e e e e e e e e e e e e e	F11B	61723	<u>Lu</u>
F11C	61724		F11D	61725	□в	F11E	61726	e <b>n</b>
F11F	61727	<b>%</b> _	F120	61728	<b>_</b> *•	F121	61729	<b>O</b> "
F122	61730		F123	61731	٢	F124	61732	
F125	61733		F126	61734	Ŧ	F127	61735	<u>.</u> କ
F128	61736	t.	F129	61737	ني	F12A	61738	~
F12B	61739	<u>.</u>	F12C	61740	₽₽₽₽	F12D	61741	
F12E	61742	Ē	F12F	61743	M	F130	61744	举
F131	61745	ノ	F132	61746	٦	F133	61747	
F134	61748		F135	61749	800	F136	61750	*
F137	61751	(((-	F138	61752	品	F139	61753	*
F13A	61754	Ē	F13B	61755	Ê¢	F13C	61756	E.

#### Table 32-1

## 32 Simplified engineering – Siemens icon font

HEX	ASCII	Character	HEX	ASCII	Character	HEX	ASCII	Character
F13D	61757	Ê→	F13E	61758	<b>₽</b> ⊷	F13F	61759	
F140	61760	i k	F141	61761		F142	61762	<b>←</b> ••
F143	61763		F144	61764	≣O	F145	61765	₽
F146	61766	E?	F147	61767	)	F148	61768	≡
F149	61769	A	F14A	61770	Ċ	F14B	61771	i
F14C	61772	?	F14D	61773	!	F14E	61774	~
F14F	61775	×	F150	61776	-	F151	61777	+
F152	61778	*	F153	61779	*	F154	61780	S
F155	61781	C	F156	61782	¥	F157	61783	•=>
F158	61784	<b>+-</b> •	F159	61785		F15A	61786	
F15B	61787	•	F15C	61788	•	F15D	61789	•
F15E	61790	•	F15F	61791	₹	F160	61792	\$
F161	61793	K	F162	61794	••	F163	61795	*
F164	61796	•	F165	61797	IÞ	F166	61798	<<4
F167	61799	•>>>	F168	61800	A	F169	61801	₽ <del>,</del>
F16A	61802	A	F16B	61803	٢	F16C	61804	Q
F16D	61805	_Q	F16E	61806	ţQ,	F16F	61807	Q
F170	61808	_@	F171	61809	<b>₽</b>	F172	61810	_©
F173	61811	<b>€</b>	F174	61812	<b>O</b>	F175	61813	_©
F176	61814	<b>€</b>	F177	61815	€ <b>`</b>	F178	61816	1:1
F179	61817	ţ]	F17A	61818	+	F17B	61819	0
F17C	61820	÷()	F17D	61821	[+	F17E	61822	<b>+</b> 0+
F17F	61823	67	F180	61824		F181	61825	
F182	61826		F183	61827	47	F184	61828	
F185	61829	Ē.	F186	61830	Ŵ	F187	61831	**⁄ъ
F188	61832	▶∕▲	F189	61833	<b>↓</b> ₽	F18A	61834	<b>€</b> ₽
F18B	61835	EQ.	F18C	61836		F18D	61837	₱⁄+
F18E	61838	₽	F18F	61839	₽	F190	61840	$\overline{\nabla}$
F191	61841	Ð	F192	61842	Ð	F193	61843	
F194	61844	F	F195	61845	×××	F196	61846	×
F197	61847	€	F198	61848	\$	F199	61849	
F19A	61850		F19B	61851	Ū <b>™</b>	F19C	61852	Ō
F19D	61853	C.	F19E	61854	ତ	F19F	61855	₩

32 Simplified engineering – Siemens icon font

HEX	ASCII	Character	HEX	ASCII	Character	HEX	ASCII	Character
F1A0	61856	đ	F1A1	61857	ġ			

## 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.

NoteClose 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<br/>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

🍌 Siemens TIA Portal Icons (OpenType)
Print SI Install
Font name: Siemens TIA Porta Version: Version 2.010;PS 002 OpenType Layout, TrueType Out
abcdefghijklmnopqrstuvwxyz ABCDEFGHIJKLMNOPQRSTUVWXYZ 1234567890.:,; ' " (!?) +-*/=
<ul> <li>The quick brown fox jumps over the lazy dog. 1234567890</li> <li>The quick brown fox jumps over the lazy dog. 12345678</li> </ul>
<sup>24</sup> The quick brown fox jumps over the lazy d
<sup>"</sup> The quick brown fox jumps c
Nete

#### Note

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

### Option 2

1. Right-click the "SiemensTIAPortallcons.ttf" file. The shortcut menu opens. Click "Install".

#### Figure 32-3

Name	Date modified	Туре	Size
SiemensTIAPortalIcons	Preview	rueType font file	523 KB
SiemensTIAPort	Print	LYPHS File	3,895 KB
SiemensTIAPort	🔋 Install	penType font file	417 KB
		-	

#### 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 "SiemensTIAPortallcons.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.

#### 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 "SiemensTIAPortallcons.ttf" file.
- 4. Open the "Windows > Font" folder.
- 5. Add the "SiemensTIAPortallcons.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.

**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.

## 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

General Services	Language & font											
Screens	Runtime language and font selection											
Keyboard Alarms												
User administration	Order Enable Language Fixed font 1 Default font Configured font 1 O G Configured font 1 Configured fon											
Language & font Tag settings	Command Connect and Information Connect and Conne											

**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.
- 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).
- 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.
- 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
▼ 💭 LHmiToolbox
▶ 🔄 Types
▼ 🚺 Master copies
▶ 1 01_PLC
▼ 🔁 02_HMI
🕨 🔚 00_Device
▼ 103_Tools
🔻 🔚 LHmiData
🕨 🔚 AutoBackup
🕨 🔚 Barcode
🕨 🔚 Chat
🕨 🔚 Email
🕨 🔚 QRCode
🔻 🔚 LHmiEng
💌 🔚 IconFont
<ul> <li>E 00_Templates</li> </ul>
itemplateGeneralStatusBar
<ul> <li>D1_Screens</li> </ul>
LHmiEng_IconFontPage1
LHmiEng_lconFontPage2
LHmiEng_IconFontPage3
LHmiEng_IconFontPage4
LHmiEng_IconFontPage5
LHmiEng_IconFontPage6
D2_PopUpScreens
Image: Barrier Barr
💌 🔚 04_Tags
Section 2015 Learning
E 05_Rules
🗢 🔚 06_CopyManual
<ul> <li>btnSiemensIconFont</li> </ul>

#### 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.



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

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61747	61748	61749	61750	61751	61752	61753	61754	61755	61756	

5. Let the icons flash. Click on a button of your choice.

Figure 32-8



#### Appendix 33

#### 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 gueries 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/supportreguest

#### 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.	Торіс
\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?" <u>https://support.industry.siemens.com/cs/ww/en/view/40227286</u>
\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" <u>https://support.office.com/en-us/article/show-the-developer-tab-e1192344-5e56-</u> <u>4d45-931b-e5fd9bea2d45?ui=en-US&amp;rs=en-US&amp;ad=US</u>
\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	<ul> <li>Release for documentation, library and project for V15.1</li> </ul>