SIEMENS

SIMATIC HMI

**HMI devices
Comfort Panels Migration Guide**

Getting Started

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Legal information

Warning notice system

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

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

Preface

Purpose of the migration guide

The migration guide contains all necessary information clearly arranged for convenient migration to the new Comfort Panels. It basically covers the following points:

- Replacing the HMI devices and the differences connected with the process
- Adaptations in the migrated database of the HMI project

Note

The content of the migration guide describes the replacement of a predecessor device with the corresponding successor from the Comfort series, see "Replacing the predecessor device with a Comfort HMI device (Page 12)".

If you replace the predecessor device with any HMI device of the Comfort series, this migration guide can only be used to a limited extent.

Note

This document is only a migration guide. Safety information, as well as the complete installation and commissioning are described in the operating instructions.

Contents

The migration guide is structured as follows:

- Introduction (Page 9)

  This chapter describes which predecessor devices are replaced by which Comfort HMI device and the most important innovations for the Comfort HMI devices.

- Replacing an HMI device (Page 13)

  This chapter basically covers the questions that arise when replacing a predecessor device with the corresponding Comfort HMI device:

  - Does the mounting cut-out change?

  - Are type and position of the interfaces different?

  - Are the slots for the memory cards different?

  - Is the soft key assignment different?

  - Is the data input different?

- Migrating a project (Page 27)

  This chapter mainly covers the steps after migration of the WinCC flexible database that result from the changeover of the HMI device. In addition, it shows how you implement the new features of the Comfort HMI devices in the WinCC project:

  - Changing the screen format from 4:3 to "Widescreen"

  - Setting the address of the HMI device in WinCC

  - Configuring and using the energy-saving functions

- Commissioning the HMI device (Page 45)

  This chapter describes the revised or new procedures for commissioning the Comfort HMI devices:

  - Transferring the project

  - Using the automatic backup

  - Restarting the HMI device after malfunction

- Use of WinCC together with STEP 7 (Page 51)

  This chapter describes the various ways in which you can use WinCC together with STEP 7.

What the migration guide does not contain

The following contents are not covered by the migration guide or only covered partially:

● The migration guide does not contain any details for the migration of a WinCC flexible project into a WinCC project.

For more information, refer to the WinCC Information System under "Migrating projects".

● The migration guide does not contain any details on configuration of the HMI device.

For more information, refer to the operating instructions of the HMI device.

Naming conventions

Term	Applies to	
Plant	● System ● Machining center ● One or several machines	
Comfort HMI device HMI device Device	● KP400 Comfort ● KTP400 Comfort ● KP700 Comfort ● TP700 Comfort ● KP900 Comfort ● TP900 Comfort ● KP1200 Comfort ● TP1200 Comfort	● KP1500 Comfort ● TP1500 Comfort ● TP1900 Comfort ● TP2200 Comfort
Key model Key HMI device	● KP400 Comfort ● KP700 Comfort ● KP900 Comfort ● KP1200 Comfort	● KP1500 Comfort
Touch model Touch HMI device	● KTP400 Comfort ● TP700 Comfort ● TP900 Comfort ● TP1200 Comfort	● TP1500 Comfort ● TP1900 Comfort ● TP2200 Comfort
WinCC	WinCC V11 (TIA Portal) or higher for configuring the devices up to and including the 12" device	WinCC V11 SP2 HSP Comfort (TIA Portal) or higher for configuring the 15" device and higher

See also

Highlights of the Comfort Panels (Page 10)

Table of contents

Introduction

<div style="text-align: right; font-size: 3em;">1</div>

1.1   Scope

The migration guide applies to the following predecessor devices:

- OP 77B
- TP 177B 4" Color
- TP 177B Mono
- TP 177B Color
- MP 177
- OP 177B Mono
- OP 177B Color
- OP 277
- TP 277
- MP 277 8" Touch
- MP 277 8" Key
- MP 277 10" Touch
- MP 277 10" Key
- MP 377 12" Touch
- MP 377 12" Key
- MP 377 15" Touch
- MP 377 19" Touch

These HMI devices are replaced by the Comfort HMI devices. Additional information is available in "Replacing the predecessor device with a Comfort HMI device (Page 12)".

1.2   Highlights of the Comfort Panels

Full functionality and maximum flexibility

All SIMATIC HMI Comfort Panels, from 4" to 22", offer high-end functionality. Functions such as archives, VB scripts and various viewers for displaying plant documentation and Internet pages are now also available with the 4" devices. All touch devices provide the option of vertical mounting and come in a wide range of models with seven touch versions and five keyboard versions, offering maximum flexibility.

Industry-compatible widescreen displays with a larger visualization area, optimum viewing angle stability and maximum brightness.

SIMATIC HMI Comfort Panels offer widescreen displays with screen diagonals ranging from 4" to 22". The new widescreen format now provides a visualization area up to 40% larger compared to the respective predecessor devices in 4:3 format. An extended viewing angle provides high contrast and optimum readability when viewed from the side, thus ensuring reliable operator control. With a brightness of up to 400 cd, this readability is also ensured in particularly bright environments.

Extended operating range for many industries and regions

SIMATIC HMI Comfort Panels are also suited for use in hazardous areas (for example, ATEX for zones 2 and 22). In addition, the dimmable LED backlighting makes the panels particularly suited for dark ambient conditions, such as in shipbuilding.

For details regarding the currently valid approvals for the specific order number, refer to the technical specifications on the Service & Support pages.

Energy saving with PROFIenergy

Energy-saving functions, such as time-controlled use of a screen saver or the plant-wide support of the PROFIenergy protocol, reduce costs during operation. The Comfort HMI devices have LED backlighting that can be dimmed up to 100% for this purpose. Another positive side effect, in addition to the lower heat generation, is that the components are subjected to less wear and tear, thus increasing the service life of the device.

You can find more information about PROFIenergy on the Internet at the following address:

Saving energy with SIMATIC S7 - PROFIenergy with Comfort Panel (http://support.automation.siemens.com/WW/view/en/58235225/133300)

Precise diagnostics with the system diagnostics viewer

In conjunction with SIMATIC controllers, this diagnostic information can be displayed directly on the Comfort Panel. For this purpose, the system diagnostics viewer is added quickly and easily to the WinCC configuration tool, without extensive configuration and without additional diagnostic hardware. This increases the plant availability, as errors can be found and eliminated faster.

High-quality enclosure and numerous interfaces

All SIMATIC HMI Comfort Panels with a display size of 7" or larger have an enclosure front made of die-cast aluminum and an integrated Ethernet switch. The key HMI devices with a tangible pressure point are especially suited for use in harsh industrial environments. Use the USB ports to connect external peripheral devices, such as printers or the configuration PC.

More security through automated backup

In the event of a defect, the automatic backup allows a quick replacement of HMI device within a very short period and without the need for a configuration PC. The automatic backup function is enabled by plugging in the optional SIMATIC HMI memory card. In the event of an error, the SIMATIC HMI memory card only has to be plugged into the replacement device.

1.3 Replacing the predecessor device with a Comfort HMI device

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Note

Limited comparability based on display size

Because of the change in display size from 4:3 to "Widescreen", you can only compare the old with the new HMI devices using the display size to a limited extent.

You must use the following table to determine the suitable replacement device.

Predecessor device	MLFB	Replaced with	MLFB
OP 77B	6AV6641-0CA01-0AX1	KP400 Comfort	6AV2124-1DC01-0AX0
TP 177B 4" Color	6AV6642-0BD01-3AX0	KTP400 Comfort	6AV2124-2DC01-0AX0
TP 177B Mono	6AV6642-0BC01-1AX1	TP700 Comfort	6AV2124-0GC01-0AX0
TP 177B Color	6AV6642-0BA01-1AX1		
TP 277	6AV6643-0AA01-1AX0		
MP 177	6AV6642-0EA01-3AX0		
OP 177B Mono	6AV6642-0DC01-1AX1	KP700 Comfort	6AV2124-1GC01-0AX0
OP 177B Color	6AV6642-0DA01-1AX1		
OP 277	6AV6643-0BA01-1AX0		
MP 277 8" Touch	6AV6643-0CB01-1AX1	TP900 Comfort	6AV2124-0JC01-0AX0
MP 277 8" Key	6AV6643-0DB01-1AX1	KP900 Comfort	6AV2124-1JC01-0AX0
MP 277 10" Touch	6AV6643-0CD01-1AX1	TP1200 Comfort	6AV2124-0MC01-0AX0
MP 277 10" Key	6AV6643-0DD01-1AX1	KP1200 Comfort	6AV2124-1MC01-0AX0
MP 377 12" Touch	6AV6644-0AA01-2AX0	TP1500 Comfort	6AV2124-0QC02-0AX0
MP 377 12" Key	6AV6644-0BA01-2AX1	KP1500 Comfort	6AV2124-1QC02-0AX0
MP 377 15" Touch	6AV6644-0AB01-2AX0	TP1900 Comfort	6AV2124-0UC02-0AX0
MP 377 19" Touch	6AV6644-0AC01-2AX1	TP2200 Comfort	6AV2124-0XC02-0AX0

Replacing an HMI device

<div style="text-align:right; font-size:3em;">2</div>

2.1 Overview of HMI devices

Differences in design and operating concept after replacement of HMI devices

This section describes the differences and additional functions of the Comfort HMI devices in relation to enclosure, display, interfaces and data input.

Enclosure

- Mounting in vertical format

  The Comfort HMI devices with touch screen are suitable for vertical mounting.

- Enclosure material

  - 4" versions with plastic enclosure

  - 7" to 22" versions with enclosure front made of die-cast aluminum.

Display

- All Comfort HMI devices feature a TFT widescreen display with the following properties:

  - Extended viewing angle

  - 16 million colors

  - Higher resolution than predecessor device

    The KTP400 Comfort has the same resolution as the TP 177B 4".

- All Comfort HMI devices have at least the same display area as the predecessor devices.

Predecessor device	Display			Comfort device	Display			
	Dimensions W x H [mm]	Size [inches]	Resolution [pixels]		Dimensions W x H [mm]	Size [inches]	Resolution [pixels]	Increase in area
OP 77B	102 x 40	4.5"	160 x 64	KP400	95 x 53	4.3"	480 x 272	8 %
TP 177B 4"	95 x 53	4.3"	480 x 272	KTP400	95 x 53	4.3"	800 x 480	-
OP 177B	115 x 86	5.7"	320 x 240	KP700	152 x 91	7.0"	800 x 480	40 %
OP 277	115 x 86	5.7"	320 x 240	KP700	152 x 91	7.0"	800 x 480	40 %
TP 177B, MP 177, TP 277	115 x 86	5.7"	640 x 480	TP700	152 x 91	7.0"	800 x 480	40 %
MP 277 8" Key	152 x 114	7.5"	640 x 480	KP900	195 x 117	9.0"	800 x 480	32 %
MP 277 8" Touch	152 x 114	7.5"	640 x 480	TP900	195 x 117	9.0"	800 x 480	32 %
MP 277 10" Key	211 x 158	10.4"	640 x 480	KP1200	261 x 163	12.1"	1280 x 800	22 %
MP 277 10" Touch	211 x 158	10.4"	640 x 480	TP1200	261 x 163	12.1"	1280 x 800	22 %
MP 377 12" Touch	246 x 185	12.1"	800 x 600	TP1500	331 x 207	15.4"	1280 x 800	50 %
MP 377 12" Key	246 x 185	12.1"	800 x 600	KP1500	331 x 207	15.4"	1280 x 800	50 %
MP 377 15" Touch	304 x 228	15.0"	1024 x 768	TP1900	410 x 230	18.5"	1366 x 768	36 %
MP 377 19" Touch	376 x 301	19.0"	1280 x 1024	TP2200	475 x 267	21.5"	1920 x 1080	12%

Interfaces

The Comfort HMI devices always have the same interfaces as the predecessor devices. Depending on the HMI device, additional interfaces are available.

Data input

- The Comfort key HMI devices have an alphanumeric input block, which is operated like the keypad of a cellular phone.

- Unlike some predecessor devices, the Comfort key HMI devices do not have K or S keys. Comfort keys HMI devices feature only function keys.

  All function keys are equipped with LEDs.

- The Comfort HMI devices with touch screen have a screen keyboard.

See also

Interfaces (Page 17)

Mapping of the soft key assignment (Page 23)

Data input (Page 26)

2.2 Mounting cut-out

Differences in the enclosure dimensions

The following tables compare the dimensions for mounting cut-out, device depth and enclosure front of predecessor devices and Comfort HMI devices.

Predecessor device	Dimensions			Comfort device	Dimensions		
	Mounting cut-out W x H [mm]	Depth of the device [mm]	Front W x H [mm]		Mounting cut-out W x H [mm]	Depth of the device [mm]	Front W x H [mm]
OP 77B	135 x 171	38	150 x 186	KP400	135 x 171	48	150 x 188
TP 177B 4"	122 x 98	48	140 x 116	KTP400	122 x 98	48	140 x 116
OP 177B	229 x 196	45	243 x 212	KP700	281 x 177	63	308 x 204
OP 277	281 x 177	56	308 x 204	KP700	281 x 177	63	308 x 204
TP 177B, MP 177, TP 277	197 x 141	44 [1]	212 x 156	TP700	197 x 141	63	214 x 158
MP 277 8" Key	338 x 206	61	362 x 230	KP900	338 x 206	63	362 x 230
MP 277 8" Touch	226 x 166	60	250 x 190	TP900	250 x 166	63	274 x 190
MP 277 10" Key	434 x 291	60	483 x 310	KP1200	434 x 268	63	454 x 289
MP 277 10" Touch	310 x 248	61	335 x 275	TP1200	310 x 221	63	330 x 241
MP 377 12" Touch	310 x 248	72	335 x 275	TP1500	396 x 291	75	415 x 310
MP 377 12" Key	450 x 290	59	483 x 310	KP1500	450 x 291	75	483 x 310
MP 377 15" Touch	367 x 289	72	400 x 310	TP1900	465 x 319	75	483 x 337
MP 377 19" Touch	449 x 379	75	483 x 400	TP2200	542 x 362	75	560 x 380

[1] 45 mm for TP 277

Compatibility of the mounting cut-outs

You can install the Comfort HMI devices in the mounting cut-outs of the following predecessor devices:

Comfort HMI device	Predecessor device	Mounting cut-out (in mm)
KP400 Comfort	OP 77B	135 x 171
KTP400 Comfort	TP 177B 4"	122 x 98
KP700 Comfort	OP 277	281 x 177
TP700 Comfort	TP 177B, MP 177, TP 277	197 x 141
KP900 Comfort	MP 277 8" Key	338 x 206
KP1500 Comfort	MP 377 12" Key	450 x 291

Note that despite the same dimensions for the mounting cut-out, the device depth and/or the enclosure front dimensions may differ from the respective dimensions of the predecessor devices.
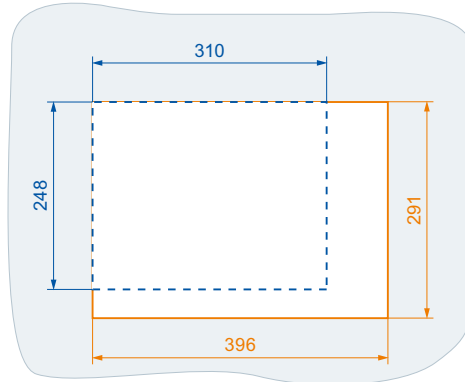
Differences in the mounting cut-outs

The following figures will clarify the changes you have to make to the mounting cut-out to install a Comfort HMI device.

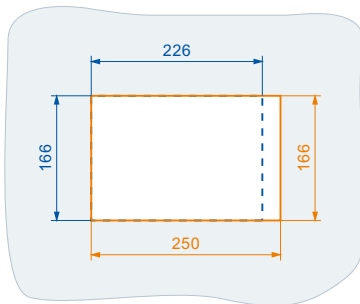Width and height are always given in millimeters.
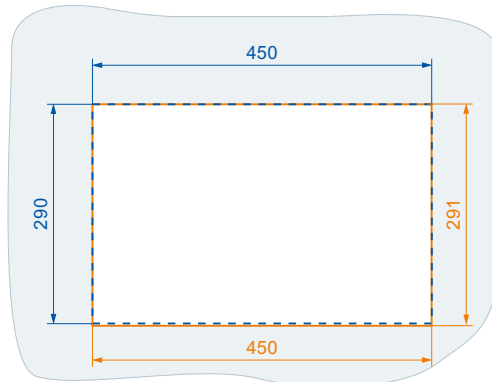
OP 177B (blue)/
KP700 Comfort (orange):
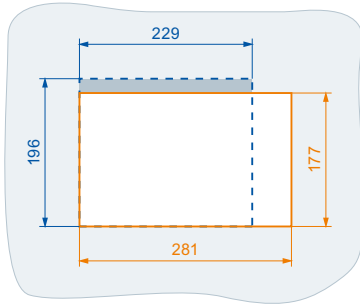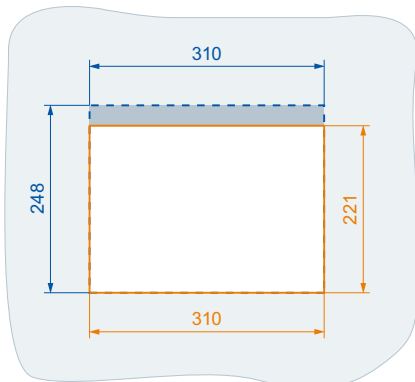
MP 377 12" Touch (blue)/
TP1500 Comfort (orange):
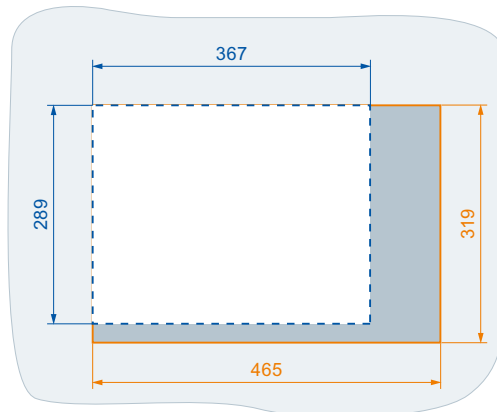
MP 277 8" Touch (blue)/
TP900 Comfort (orange):

MP 377 12" Key (blue)/
KP1500 Comfort (orange):
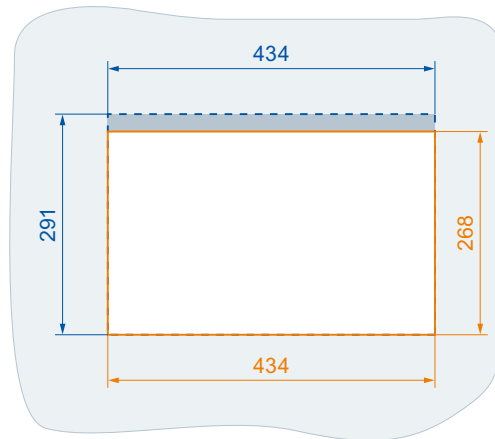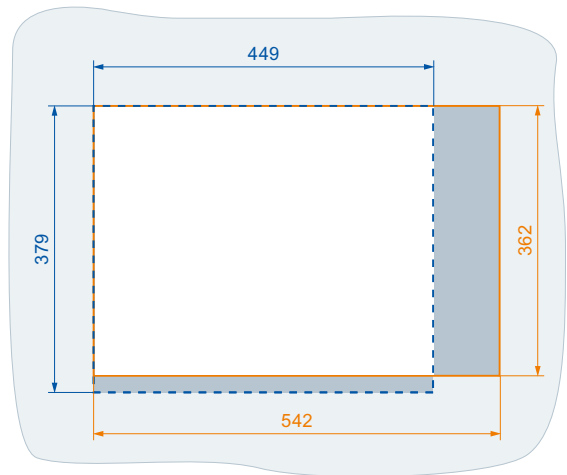
MP 277 10" Touch (blue)/
TP1200 Comfort (orange):

MP 377 15" Touch (blue)/
TP1900 Comfort (orange):

MP 277 10" Key (blue)/
KP1200 Comfort (orange):

MP 377 19" Touch (blue)/
TP2200 Comfort (orange):

2.3 Interfaces

Location and type of interfaces for predecessor devices and Comfort HMI devices

The Comfort HMI devices always have the same interfaces as the predecessor devices.

Exception: The RS-232 interface of the OP 77B predecessor device is not available for the Comfort HMI devices.

The Comfort HMI devices have the following *additional* interfaces:

- All Comfort HMI devices:

  USB type Mini-B for commissioning with a configuration PC

- Comfort HMI devices as of KP/TP700 Comfort:

  – Audio Line IN / OUT as of KP/TP700 Comfort, e.g. for connecting an audio amplifier

  – Second interface USB type A, for connection of I/O devices such as printers or keyboard

  – Second PROFINET interface (100 MB Ethernet)

  – As of KP/TP1500 Comfort: A GB PROFINET interface (PROFINET basic services, 1 GB Ethernet)

The following figure shows the interfaces on the predecessor devices of the KP400 Comfort and KTP400 Comfort.
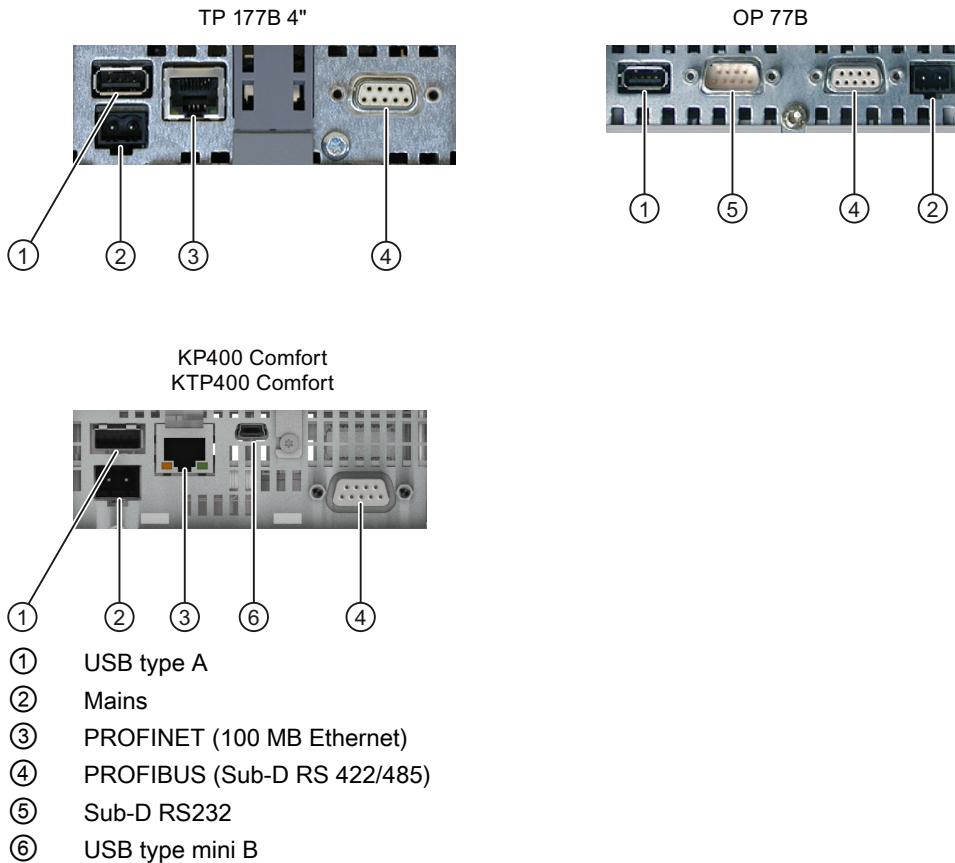
TP 177B 4"   OP 77B

KP400 Comfort
KTP400 Comfort

①	USB type A
②	Mains
③	PROFINET (100 MB Ethernet)
④	PROFIBUS (Sub-D RS 422/485)
⑤	Sub-D RS232
⑥	USB type mini B

The following figure shows the interfaces on the predecessor devices of the Comfort HMI devices KP/TP700 Comfort to KP/TP1200 Comfort.

TP 177B   OP 177B   MP 177 6"
TP 277   OP 277   MP 277 8" Key + Touch
                              MP 277 10" Key + Touch

KP700 Comfort   TP700 Comfort
KP900 Comfort   TP900 Comfort
KP1200 Comfort   TP1200 Comfort
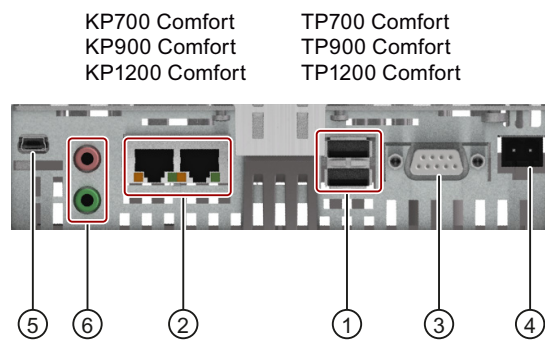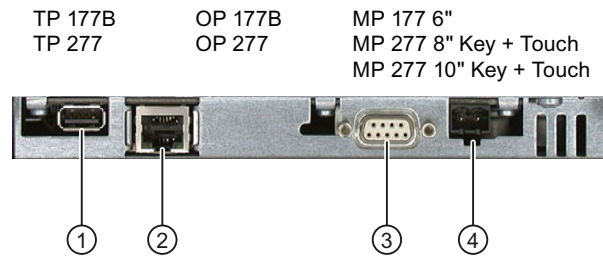
① USB type A

   The predecessor devices MP 277 8" and MP 277 10" have two USB type A connectors
② PROFINET (100 MB Ethernet)
③ PROFIBUS (Sub-D RS 422/485)
④ Mains
⑤ USB type mini B
⑥ Audio Line IN / OUT

The following figure shows the interfaces on the predecessor devices of the Comfort HMI devices KP/TP1500 Comfort to TP2200 Comfort.

MP377 12" Key   MP377 12" Touch
MP377 15" Touch
MP377 19" Touch

KP1500 Comfort   TP1500 Comfort
TP1900 Comfort
TP2200 Comfort
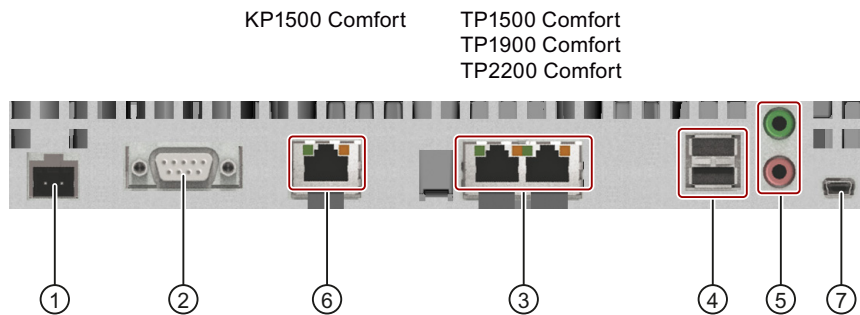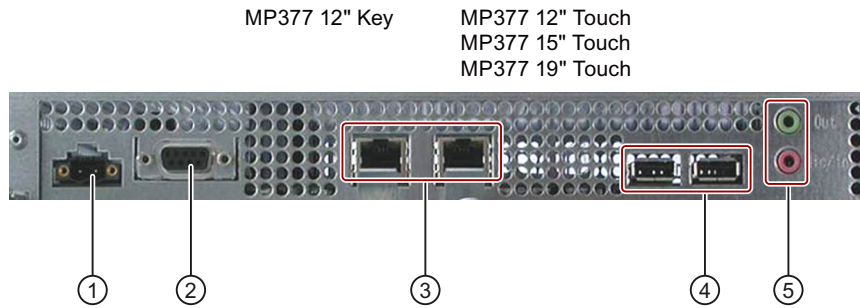
①	Mains
②	PROFIBUS (Sub-D RS 422/485)
③	PROFINET (100 MB Ethernet)
④	USB type A
⑤	Audio Line IN / OUT
⑥	PROFINET (PROFINET basic services, 1 GB Ethernet)
⑦	USB type mini B

2.4 Slots for memory cards

Location of the slots for predecessor devices and Comfort HMI devices

All Comfort HMI devices have two slots for SD memory cards. The slots for the Comfort HMI devices are protected by a sliding cover.

The following figure shows the memory card slots for TP 177B 4" (left) and KTP400 Comfort (right). The figure applies in the same manner for OP 77B and KP400 Comfort.
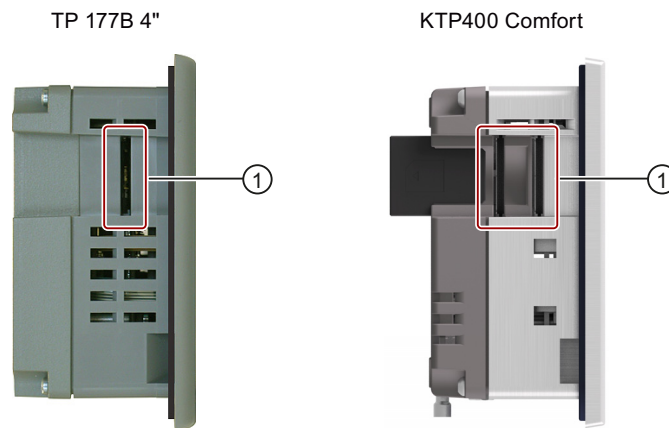
① Slots

The following figure shows the memory card slots based on the example of MP 177 (left) and TP700 Comfort (right). The figure applies in the same manner to the following devices:

● Predecessor devices: OP/TP 177B and all versions of the 277 series

● Comfort HMI devices: KP/TP700 Comfort up to TP2200 Comfort
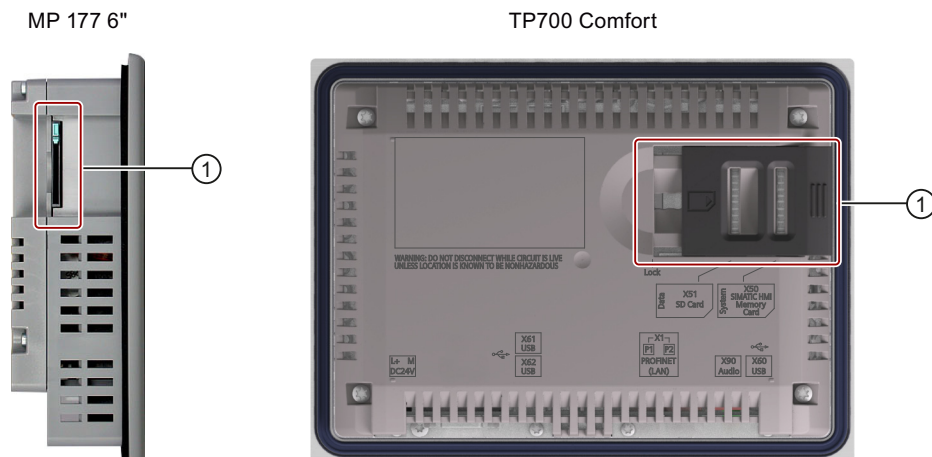
① Slots

Number and type of slots for Comfort HMI devices

KP400 Comfort	KP700 Comfort	TP700 Comfort
KTP400 Comfort	KP900 Comfort	TP900 Comfort
	KP1200 Comfort	TP1200 Comfort
	KP1500 Comfort	TP1500 Comfort
		TP1900 Comfort
		TP2200 Comfort
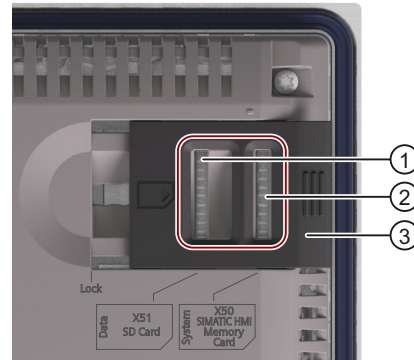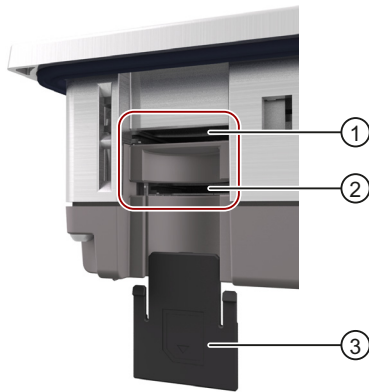
①   Slot for memory card in "SD(IO/HC)" or "MMC" format.

        Recommendation: SIMATIC HMI Memory Card 2 GB

②   Slot for the system memory card.

        Permissible: SIMATIC HMI Memory Card 2 GB

③   Safety sliding cover

        KP400 Comfort / KTP400 Comfort: infinitely variable

        From KP700 Comfort/TP700 Comfort: two-level

Note

Only the SIMATIC HMI Memory Card 2 GB offers protection from loss of saved data in case of a power failure. Order number: 6AV2181-8XP00-0AX0

See also

Using automatic backup (Page 48)

2.5 Mapping of the soft key assignment

Assignment of the function keys of predecessor device on Comfort HMI device

When replacing the HMI devices, the function key assignments are imported from the predecessor device to the Comfort HMI device according to the following rules:

Rule	Effect	Measure
The assignment of an old function key is transferred to the function key at the same position relative to the display of the Comfort HMI device.	The functions can be assigned different numbers on the Comfort HMI device.	If necessary, edit the description of the soft key assignment in the plant documentation.
The assignment of **K** keys is *not* transferred.	The functions of the **K** keys are deleted.	Before you replace the predecessor device, create a button for each assigned **K** key. Then copy the function list of the **K** keys to the buttons. Copy the function list to free function keys after migration.
Programmed LED functions are transferred to corresponding function keys at the same position on the Comfort HMI device.	-	-

Note

Create new labeling strips after replacing the device, if necessary.

Labeling strips are provided as a Word document in the WinCC product package. You can find the Word document on the installation DVD in the "Support" folder.

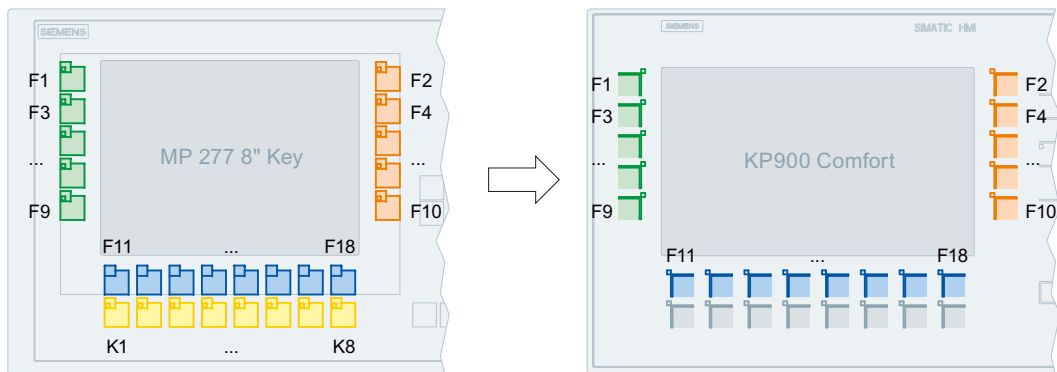### Function key assignment for KP400 Comfort and KTP400 Comfort

The following figure applies in the same manner for the assignment of the four function keys (F1 to F4) from TP 177B 4" to KTP400 Comfort.
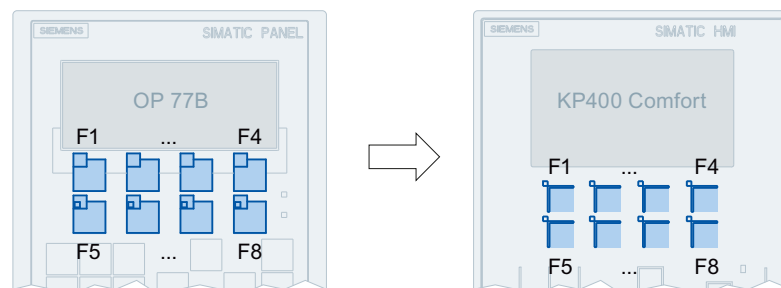
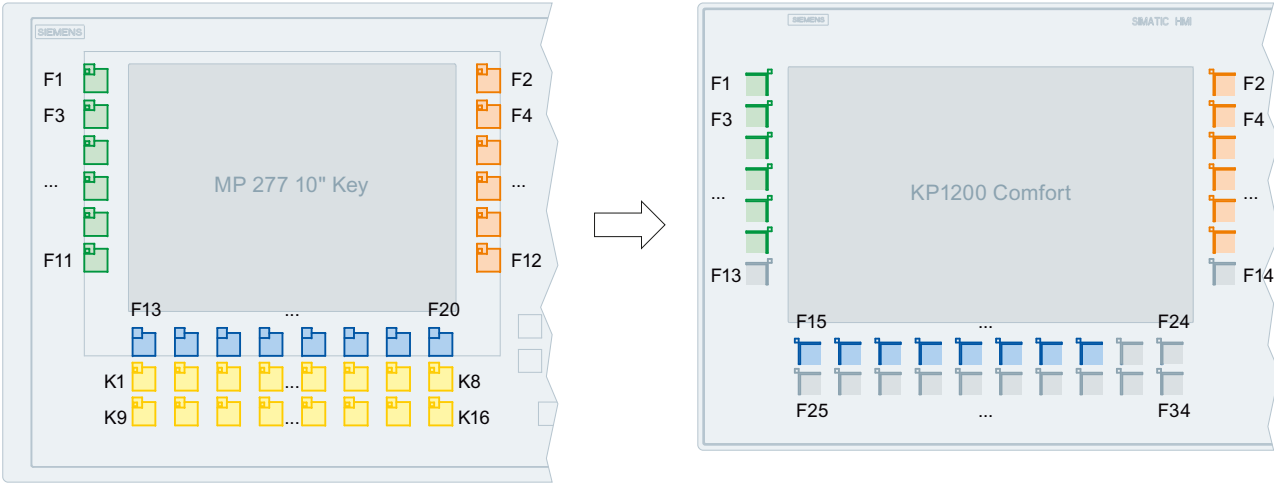## Function key assignment for KP700 Comfort
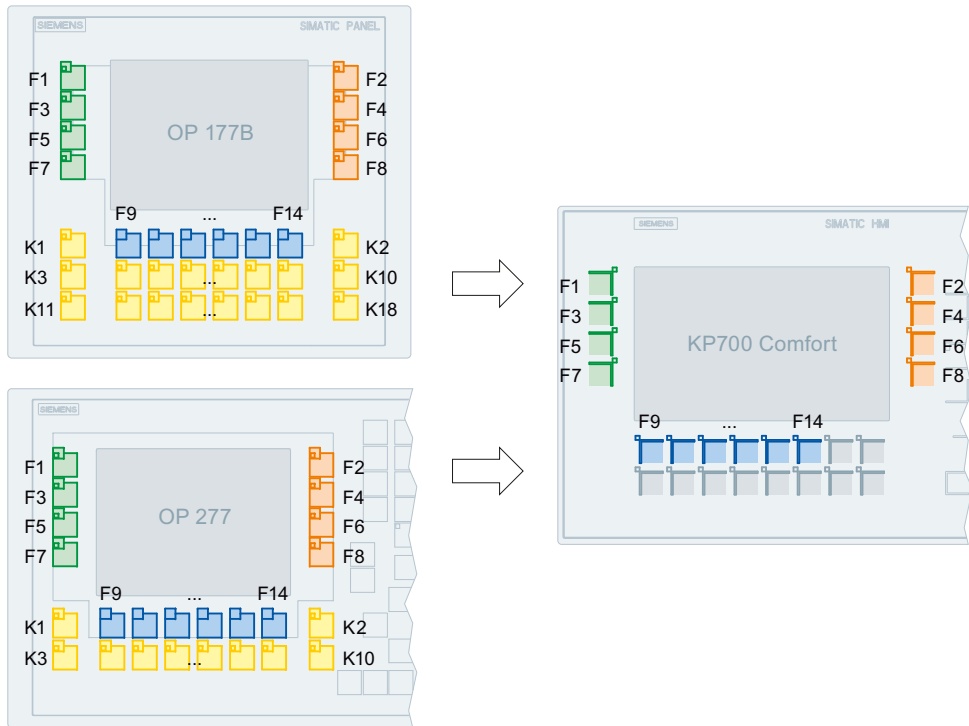
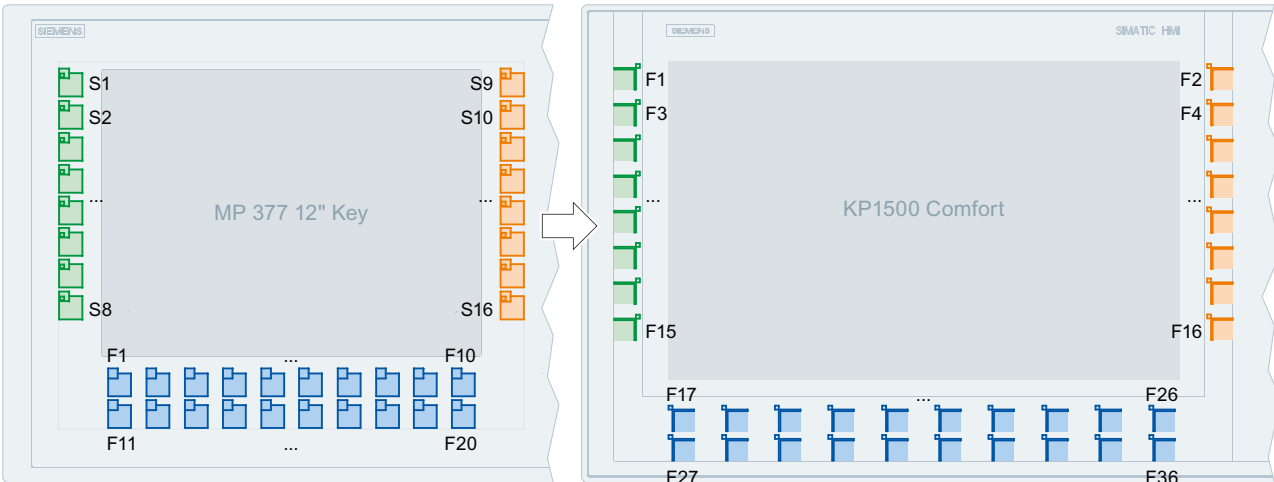## Function key assignment for KP900 Comfort

Function key assignment for KP1200 Comfort

Function key assignment for KP1500 Comfort

2.6 Data input

Alphanumeric input block

Unlike predecessor devices, the Comfort key HMI devices are equipped with an alphanumeric input block that works in a similar way to the keypad of a cell phone.

The following figure shows the alphanumeric input block:

Press a button repeatedly to jump between available characters. When you press a key long enough, the number is inserted automatically.

The characters available for input depends on the text box involved. The following figure shows the entry of a value using the alphanumeric input block.
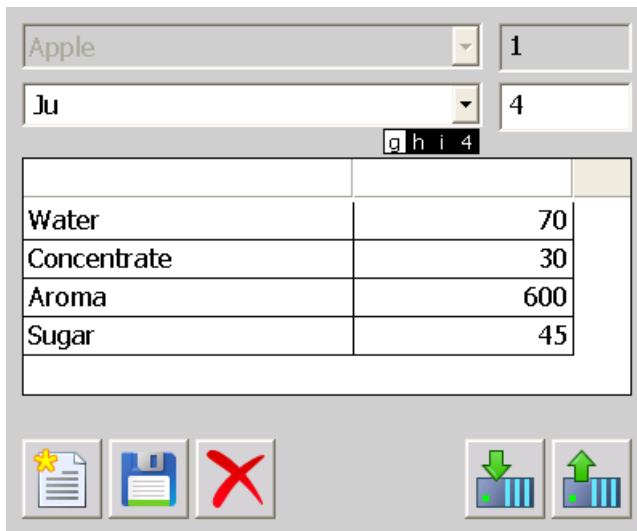
You can also connect an external keyboard.

Screen keyboard on the touch screen

All Comfort HMI devices with touch screen use an alphanumeric screen keyboard.

The appearance and the key layout of the screen keyboard depends on the HMI device.

You can also connect an external keyboard.

Migrating a project

<div style="text-align: right; font-size: 3em;">3</div>

3.1 Overview

The new Comfort HMI devices are configured with WinCC only.

In addition to the replacing the HMI devices in the plant, you have to migrate the project data.

The following format is supported:

● Project file from WinCC flexible 2008 SP2

Note

This migration guide only contains the recommendations for changing the screen format from 4:3 to Widescreen.

Detailed information on migration of the project data is available in the WinCC Information System.

Comparison of the available memory

The following two tables compare the available memory of the predecessor devices with those of the Comfort HMI devices. The Comfort HMI devices have sufficient memory to visualize the process sequences just like the predecessor devices and to save the process data.

Usable memory for user and recipe data

Predecessor device	Usable memory for application data	Usable memory for recipe data [2]	Comfort device	Usable memory for application data	Usable memory for recipe data
OP 77B	1 MB	32 KB	KP400	4 MB	512 KB
TP 177B	2 MB		KTP400		
MP 177			KP700	12 MB	2 MB
OP 177B			TP700		
OP 277	4 MB	64 KB	KP900		
TP 277			TP900		
MP 277 Key [1]	6 MB		KP1200		
MP 277 Touch [1]			TP1200		
MP 377 12" Touch	12 MB	128 KB	TP1500	24 MB	4 MB
MP 377 12" Key			KP1500		
MP 377 15" Touch			TP1900		
MP 277 19" Touch			TP2200		

[1]   8" and 10" version

[2]   Can be extended via memory card

Additional memory for options and memory card

Predecessor device	Additional memory for options	Slot for memory card	Comfort device	Additional memory for options	Slot for memory card
OP 77B	-	1 x MMC/SD combination slot	KP400	4 MB	2 x MMC/SD combination slot [2]
TP 177B			KTP400		
MP 177			KP700	12 MB	
OP 177B			TP700		
OP 277			KP900		
TP 277			TP900		
MP 277 Key [1]			KP1200		
MP 277 Touch [1]			TP1200		
MP 377 12" Touch	12 MB	1 x MMC slot 1 x CF slot	TP1500	24 MB	
MP 377 12" Key			KP1500		
MP 377 15" Touch			TP1900		
MP 277 19" Touch			TP2200		

[1]   8" and 10" version

[2]   Only the SIMATIC HMI Memory Card 2 GB is permitted as system memory card. Order number: 6AV2181-8XP00-0AX0

3.2 Migrating a project

The steps listed below only represent an overview of the migration of a WinCC flexible project.

A detailed description of the individual migration steps is available in the WinCC Information System under "Migrating projects".

Procedure

Proceed as follows:

1. Save all data of the old HMI device, especially process-relevant data such as recipes or logs.
2. Migrate the original project.
3. Edit the migrated project based on the migration protocol.

Result

The project data are migrated to WinCC and post-edited. The predecessor device is still included in the project. Before you switch over the HMI device, specify the settings for screen changeover.

3.3 Switching screen from 4:3 to Widescreen

3.3.1 Overview

Introduction

An essential feature of the Comfort HMI devices is that the display format has changed from 4:3 to "Widescreen". This change has increased the visualization area by up to 50%.
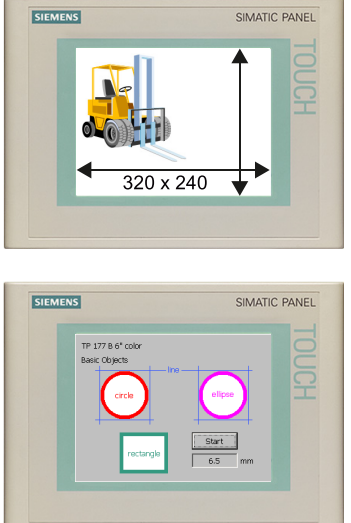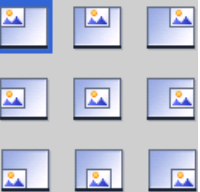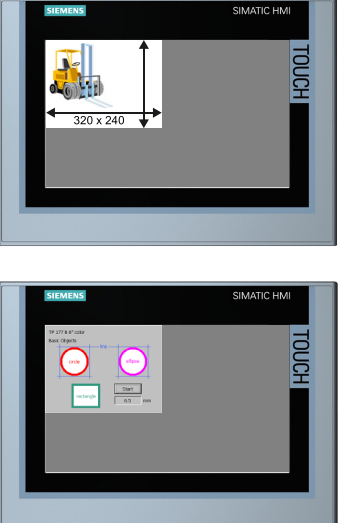
In the course of the project migration, you will switch over the predecessor device to the Comfort HMI device in WinCC. Before switching the HMI device, you define how the previous screen contents are to be migrated into the new format.

Settings for the adaptation of screens

You make the settings for the adaptation of screens centrally in WinCC for all screens of the project. To do this, open the "Settings" dialog with "Options > Settings". The various options are listed in the "Settings" dialog box under "Visualization > Adaptation of screens and screen objects":
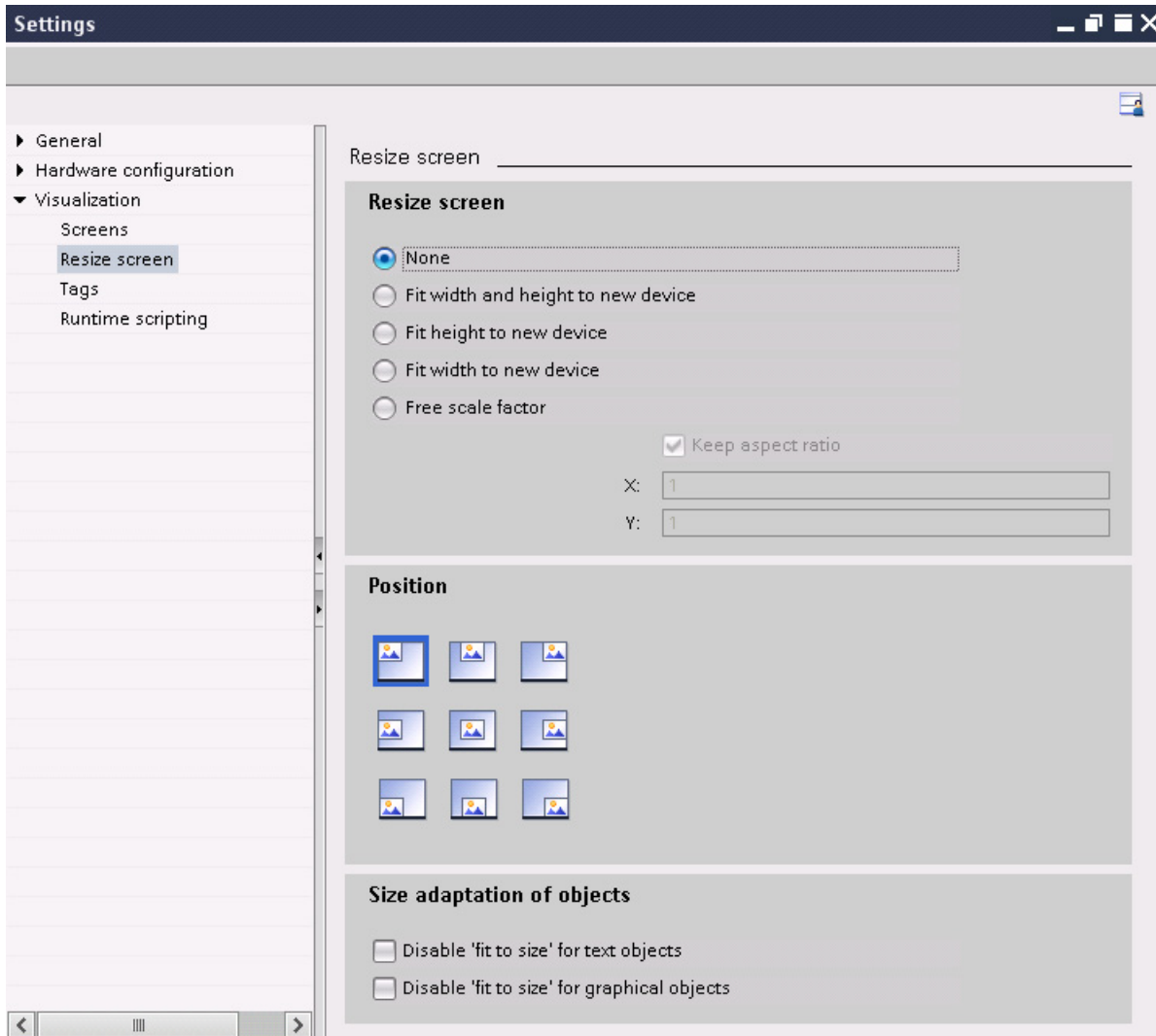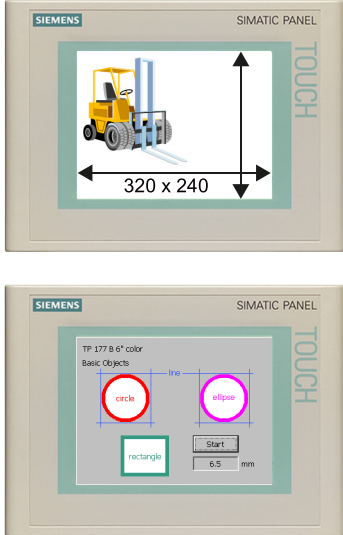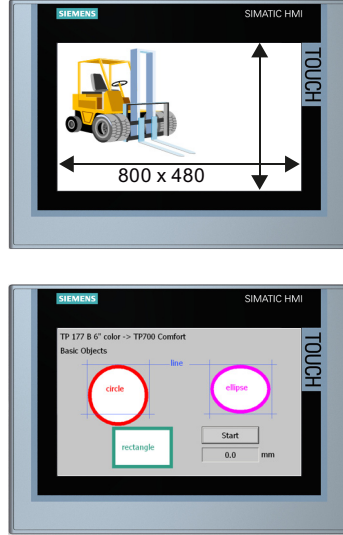
3.3.2 Switching without adaptation

TP 177B 6"	Setting	TP700 Comfort
	Adaptations for screens and screen objects: "None" **Position:** Use "Position" to define the positioning of the screen, e.g. "Top left".	

Result

The screen size of the predecessor device is retained at 320 x 240 pixels.

	Yes	No
Distorted screen elements possible		X
Truncated screen elements possible		X
Greatly reduced screen elements possible	X	

3.3.3   Switchover with adaptation to screen

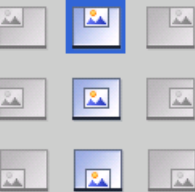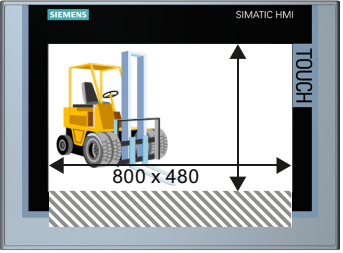| TP 177B 6"	Setting	TP700 Comfort
	Adaptations for screens and screen objects: "Adapt width and height to new screen" **Position**: "None"	
		  The "Circle" object is only increased, not distorted. A "circle" always remains a "circle".
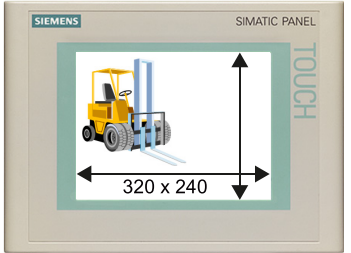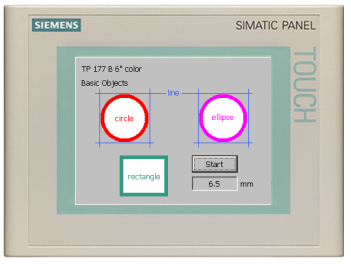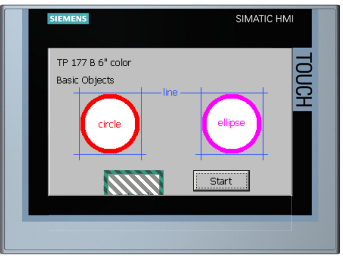
Result

The screen size is stretched to the height and width of the target device.

	Yes	No
Distorted screen elements possible	X	
Truncated screen elements possible		X
Greatly reduced screen elements possible		X

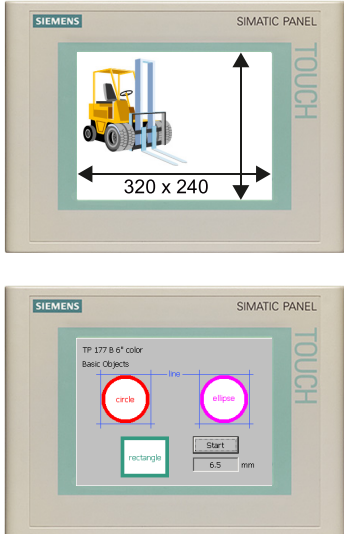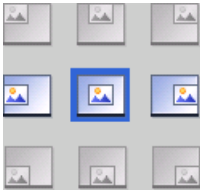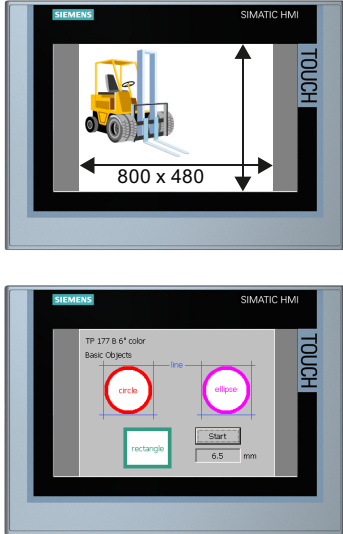## 3.3.4 Switchover with adaptation to screen width

TP 177B 6"	Setting	TP700 Comfort
320 x 240	**Adaptations for screens and screen objects**: "Adapt width to new screen" **Position**:	800 x 480

Result

The screen size is stretched to the width of the target device. If objects are located completely or partly outside the visible area, these objects are not displayed in Runtime.

	Yes	No
Distorted screen elements possible		X
Truncated screen elements possible	X	
Greatly reduced screen elements possible		X

3.3.5 Switchover with adaptation to screen height

TP 177B 6"	Command	TP700 Comfort
320 x 240 	**Adaptations for screens and screen objects:** "Adapt height to new screen" **Position:** 	800 x 480

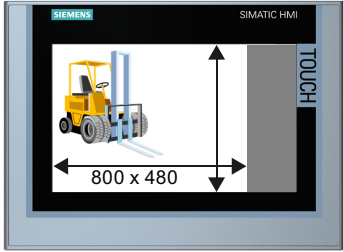**Result**
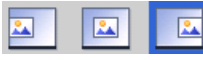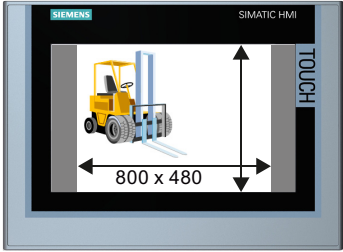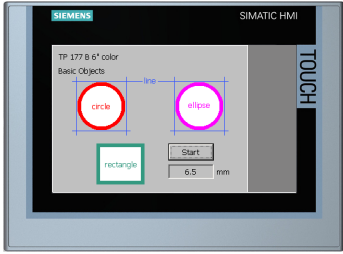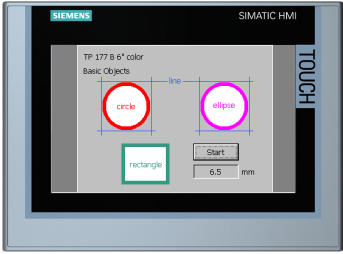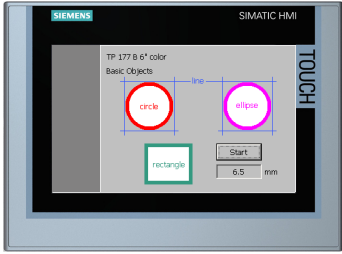
The screen size is stretched to the height of the target device.

	Yes	No
Distorted screen elements possible		X
Truncated screen elements possible		X
Greatly reduced screen elements possible		X

3.3.6 Recommendation for screen changeover

Adapt height to new screen

In most cases, the setting "Adapt height to new screen" is the best choice for the switchover from screen format 4:3 to Widescreen. With this setting, objects are not distorted or truncated. You can also determine the positioning of the objects using the "Position" setting.
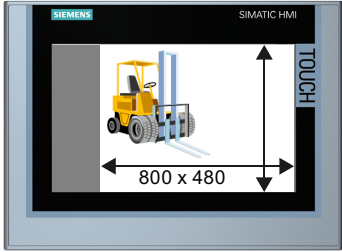
"Position" setting			
Result after changeover			

You can use the additional free space for project expansions, for example.

3.3.7 Additional setting options

You have the option to use "Free scaling" under "Settings" to enter scaling factors for X and Y alignment, if necessary. For example, enter the factor "1.5" for a 1.5 magnification.

You can also suppress automatic resizing of text and graphic objects. The following figure shows the effects of automatic resizing based on a graphic object with two aligned buttons:
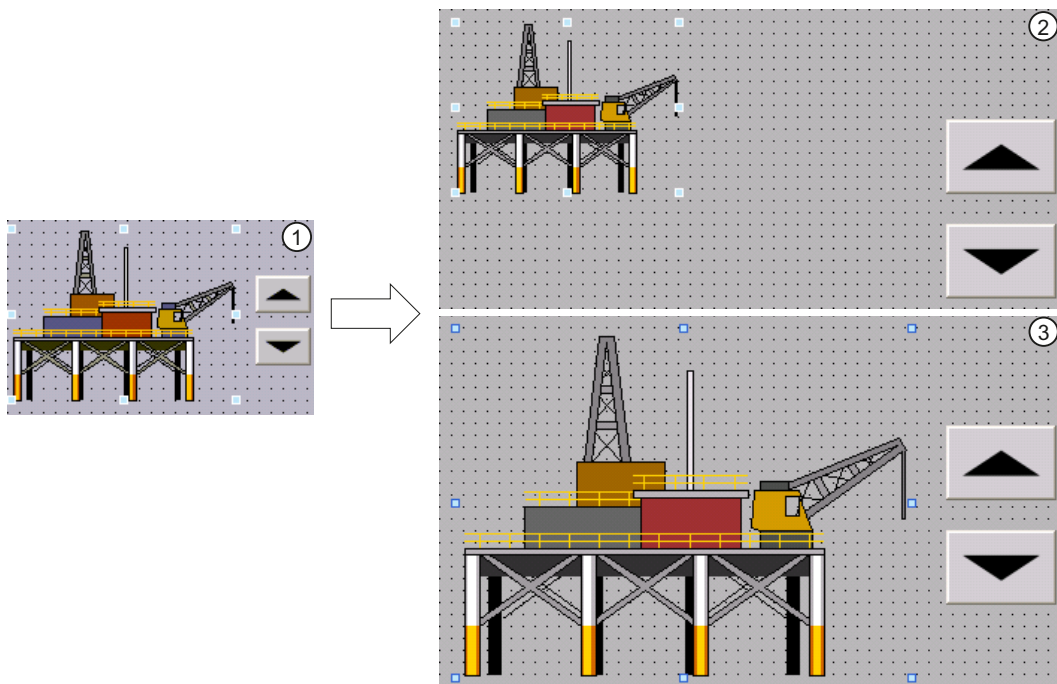
① Initial situation:
- Two buttons are aligned on a graphic object.
- In the object properties of the graphic object, the "Adapt object size to graphic" or "Match object size to graphic" option is activated under "Display > Fit to size".

② Option 1: You want to retain the original properties of the graphic object after changing over the HMI device.
- Clear the option "Suppress fit to size for graphic objects" in the settings under "Fit to size of objects".

Result: The graphic object is retained in its original size after changing over the HMI device. The alignment with the buttons is lost.

③ Option 2: After changing over the HMI device, the graphic object is to be placed relative to the new screen resolution.
- Select the option "Suppress fit to size for graphic objects" in the settings under "Fit to size of objects".

The "Adapt graphic to object size" option is automatically selected in the object properties of the graphic object. The two buttons are still aligned correctly to the graphic object after changeover of the HMI device.

You can find more information on this topic in the WinCC Information System under "Visualizing processes > Using general functions > Replacing device > Adapting screens to new device".

3.3.8 Migrating pictograms with key HMI devices

If you have configured pictograms to function keys of a previous key device, the pictograms are displayed as squares after the changeover. The square format ensures a uniform representation. In addition, the pictograms are not distorted in case of later device changeovers.

Before changing the HMI device (OP 177)	After changing the HMI device (KP700 Comfort)
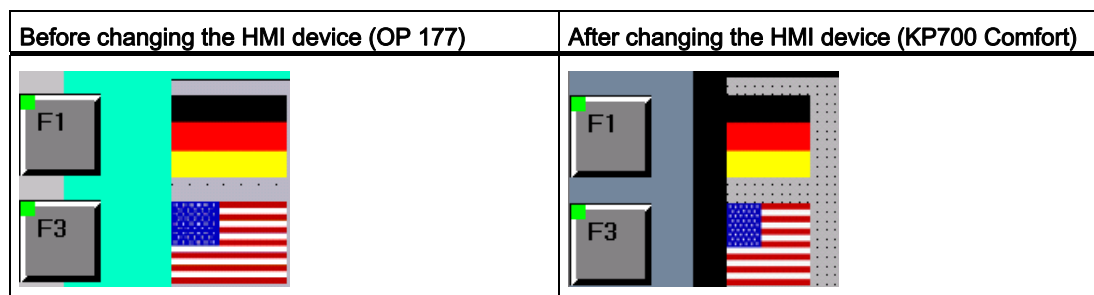
Restore original format

You can the restore the original format at a central point in WinCC for all the screens of an HMI device.

The following table shows the size and the aspect ratio of the pictograms for the predecessor devices:

HMI device	OP 77B	OP 177B OP 277	MP 277 8" Key MP 277 10" Key	MP 377 12" Key
Pictogram size (W x H) in pixels	23 x 16	53 x 38	80 x 58	80 x 56
Aspect ratio (width to height)	1.43:1	1.39:1	1.38:1	1.42:1

Also take into account the display resolution of the Comfort HMI devices when calculating the aspect ratio. The maximum is a width of 99 pixels. An overview of the display resolutions is available under "Overview of HMI devices (Page 13)".

Proceed as follows:

1. Determine the new pictogram size using the table above and the size ratio of the display resolution.

2. Open the "Runtime settings" of the HMI device in WinCC.

3. Select the option "User-defined pictogram size" under "Screens > Function keys".

4. Enter the calculated size ratio under "X" and "Y".

Result

The pictograms of the function keys are corrected and displayed without distortion.
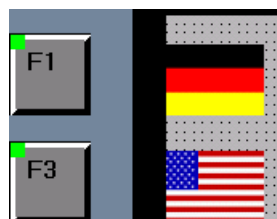
In this way, you can change the size of pictograms at any time.

3.4 Switching over the HMI device
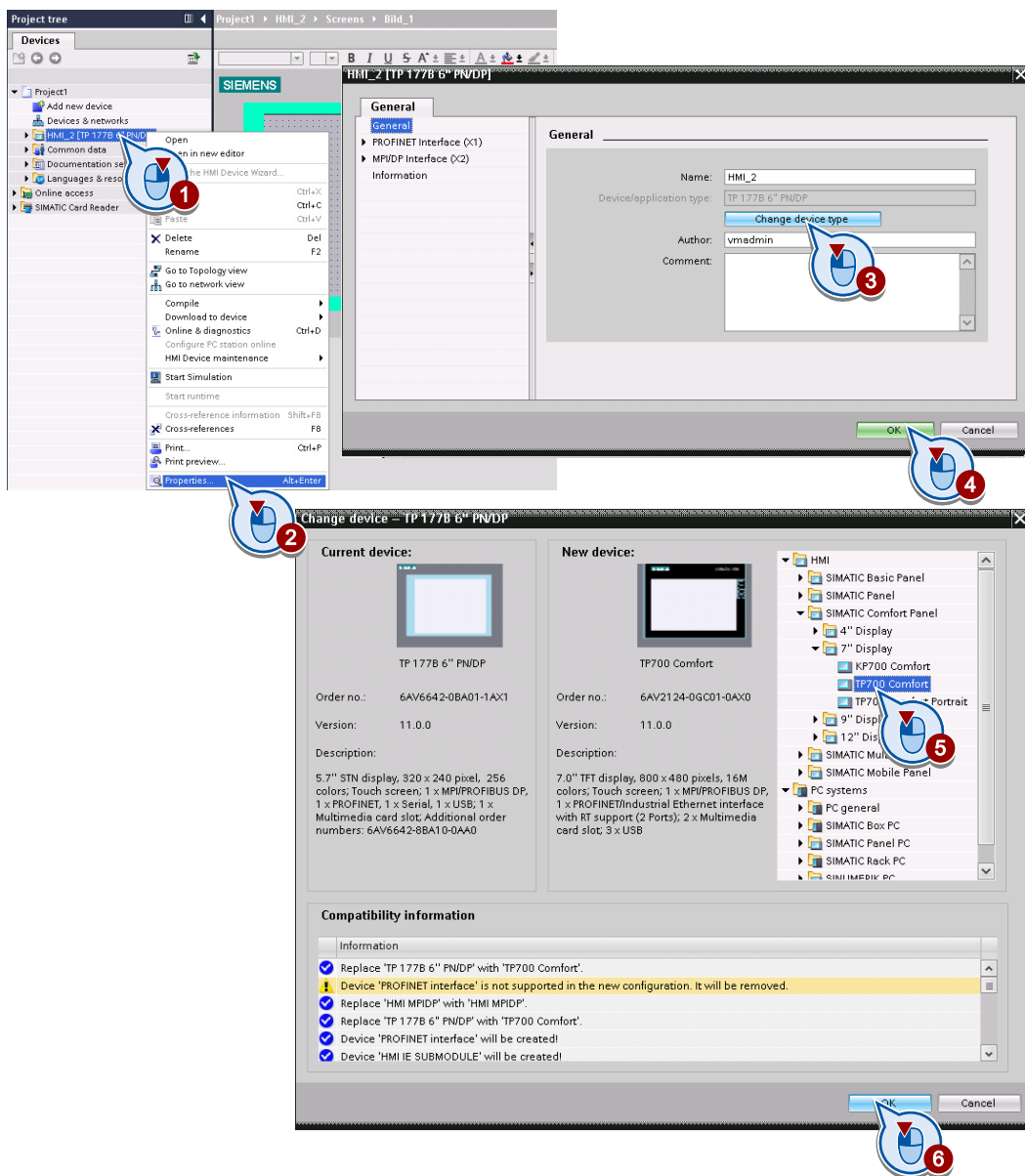
Requirements

- Adaptations for screens and screen objects are set for changing the display format (see Switching screen from 4:3 to Widescreen (Page 29)).

- The project tree is open in WinCC.

Procedure

Proceed as follows:

Result

The HMI device is changed over:

- The format of the screens is changed from 4:3 to Widescreen.

- The screen objects are placed according to the settings in the screens.

- The assignment of the function keys is migrated according to the function key assignment.

Color settings

The Comfort HMI devices can display graphic objects with a color depth of 16 bit and 32 bit. For this you have to configure the graphic objects with the required color in the project. To do this, select the required "Color depth" in the "Runtime settings" of the HMI device in WinCC under "General":
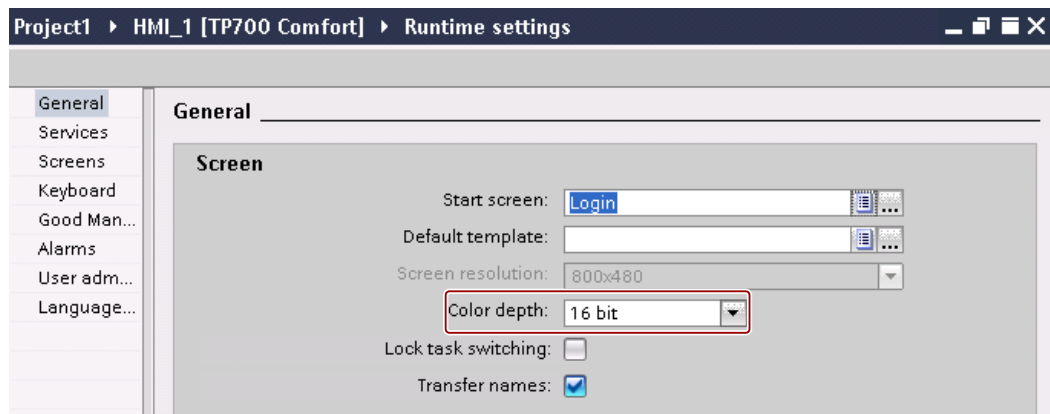
You also set this color depth in the Control Panel of the HMI device:
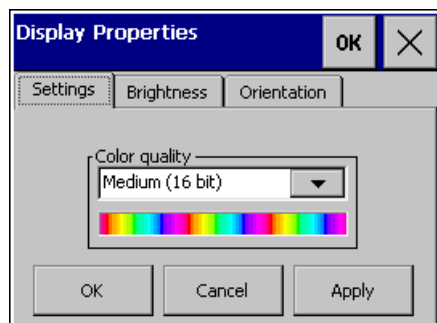
Note

Objects with greater color depth require more computing power and memory on the HMI device. If you are monitoring and controlling time-critical processes, use a lower color depth for the configuration.

3.5 Setting the address of the HMI device

In WinCC flexible, an IP address set for an HMI device in the project was not transferred to the HMI device.

As of WinCC V11, an IP address set in the project is assigned to the respective HMI device during the transfer. You assign IP addresses for all HMI devices centrally in the "Devices & Networks" editor:
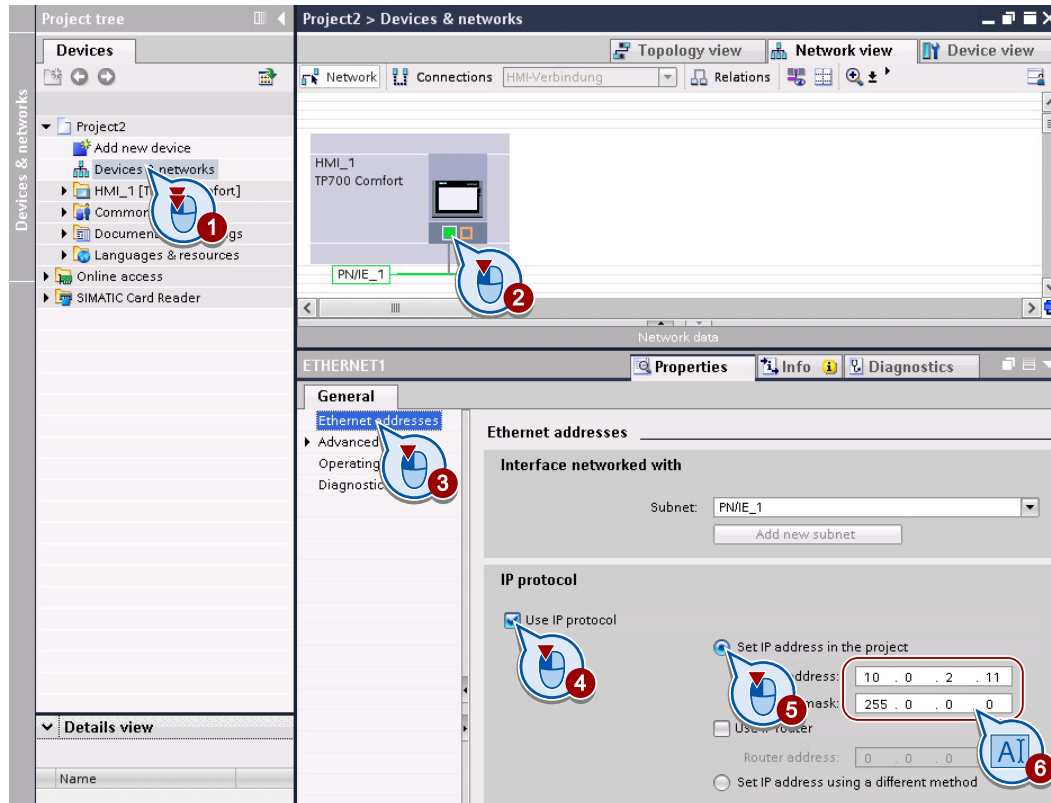
As an alternative, you can still set the IP address using the Control Panel of the HMI device or an DHCP server. In both cases, select the option "Get IP address another way" in WinCC.

3.6 Using energy-saving functions

3.6.1 Application

The energy required for display backlighting, up to 40%, makes up a large part of the total power consumption of an HMI device. To reduce energy consumption, the Comfort HMI devices come equipped with LED backlighting. You can infinitely dim the display or turn it off completely. You will see energy savings of up to 40% this way.
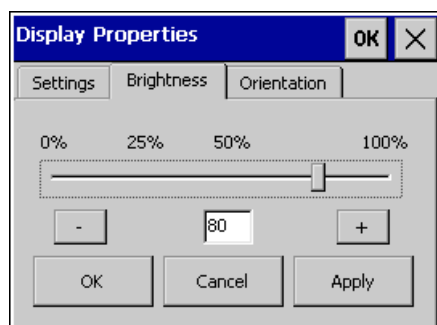
You can set the display brightness as soon as you configure the HMI device in the Control Panel.

The energy-saving functions of the Comfort HMI device lower the operating costs during operation while increasing the display service life.

3.6.2 Configuring the energy-saving function

Introduction

You have the following options to use the energy-saving functions of the HMI device:

- Activate the "Blank Screen" screen saver.
- Control the display brightness using the system function.

The listed options do not preclude each other. This way you can develop an intelligent energy-saving concept in which the operator reduces the brightness as required, for example. In case of long periods of inactivity, the display can be switched off automatically after a certain period of time.

Configuring the energy-saving function using the screensaver

If you want to turn off the display after a specified time without operator action, configure the screensaver in the Control Panel of the HMI device:
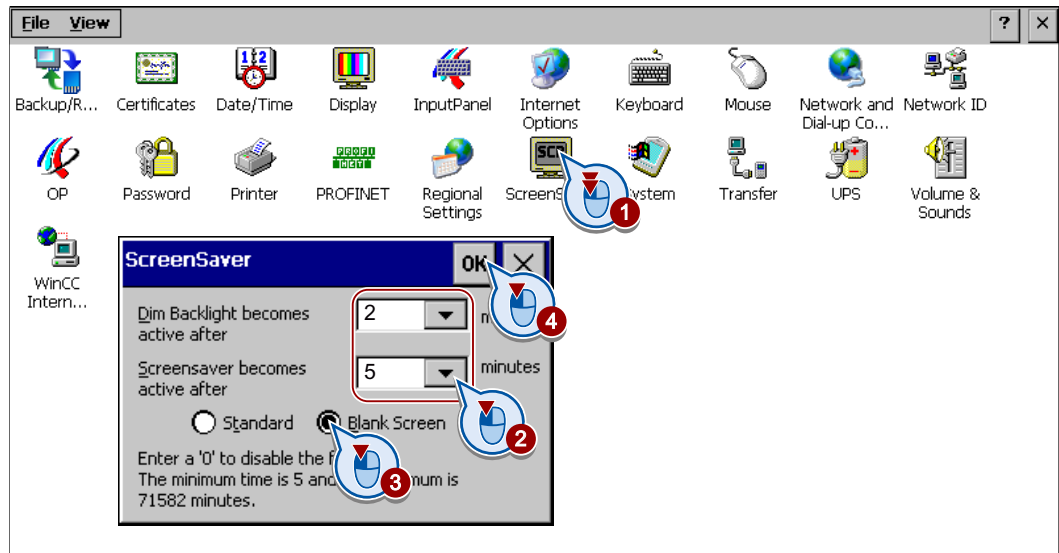
In this example, the brightness of the display backlighting is reduced after two minutes. The display is switched off completely after five minutes.

Controlling the display brightness using the system function

You can also control the display brightness with the system function "SetBrightness". You can configure this system function, for example, on a slider control and regulate the brightness using "Brightness " tag:

1. Configure a slider control with a maximum value "100" and a minimum value "10".

   Background: As project engineer you have to ensure that operating elements can be read even with a dimmed display. Protection against unintentional operation is only guaranteed when the display is switched off.

   Use a button if you want to switch off the display completely. Configure the system function "SetBrightness" to the "Pressed" event and set the "Value" to "0".

2. Configure the "Brightness" tag as a process value.

3. Configure the system function "SetBrightness" to the "Change" event of the slider control.

4. Select the "Brightness" tag as "Value".

When you operate the slider control in Runtime, the brightness is set to the corresponding value.

3.6.3 Controlling display brightness

You can either switch on a switched-off display with an operator action or you can gradually increase the brightness.
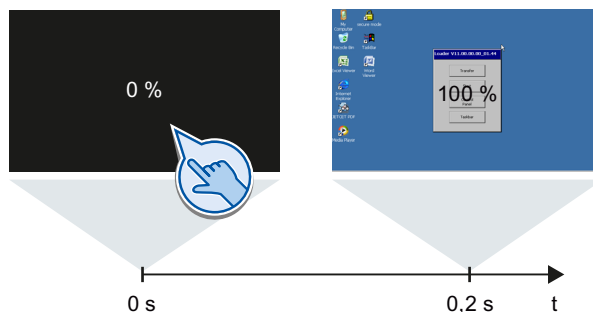
Requirements

The display is switched off.

Procedure

Proceed as follows:

1. To switch on the display, briefly touch it or press any system key.

2. To gradually increase the display brightness, touch the touch screen until the desired brightness has been reached. Use the cursor key <Up> for HMI devices with keys.
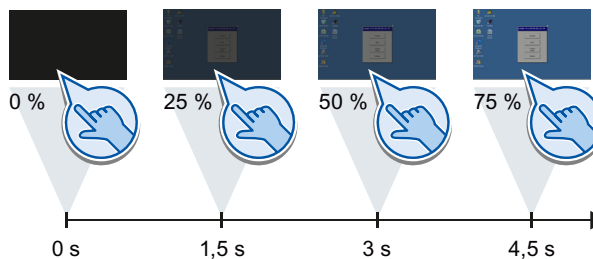
Result

If you have switched on the display with a short operator action, it is set to the brightness value set in the Control Panel, e.g. 100%.

If you increase the display brightness gradually, the brightness value set in the Control Panel is ignored. If a brightness of "75%" is configured, for example, you can still set the display to a brightness of "100%" by gradually increasing it.

Note

The minimum adjustable brightness value depends on the display size:

- Comfort HMI devices 4" to 12": Minimum adjustable brightness value = 10%
- Comfort HMI devices 15" to 22": Minimum adjustable brightness value = 25%

Commissioning the HMI device

<div align="right" style="font-size:2em;font-weight:bold">4</div>

4.1 Overview

To transfer the migrated project from the configuration PC to the Comfort HMI device, connect the Comfort HMI device with one of the following interfaces on the configuration PC:

- Ethernet
- USB
- PROFIBUS/MPI

After successful transfer, you can insert the system memory card in the Comfort HMI device and activate automatic backup as part of the service concept.

In the event of a fault, it is usually sufficient to restart the device or update the operating system. Resetting to factory settings ("bootstrapping") is only necessary in case of serious errors, for example, in case of a corrupt file system.

4.2 Transferring a project

NOTICE
Note the information regarding connection of an HMI device to a configuration PC in the operating instructions of the Comfort HMI device.

The project transfer is shown based on a USB connection.

Requirements

A project with configured Comfort HMI device is open in WinCC.

Procedure

Proceed as follows:

1. Connect the HMI device and configuration PC via a USB 2.0 cable, type USB-A to USB-B mini.
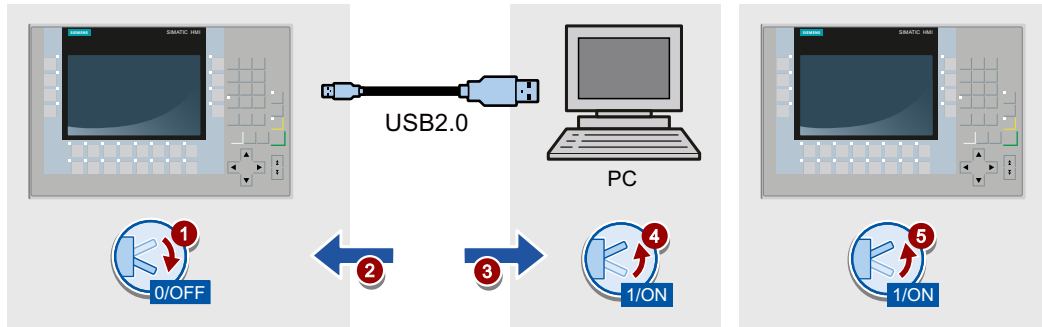
The configuration PC and HMI device are connected. If Windows XP is installed on the configuration PC, you are prompted to install the driver. Use the "Automatic search" option. The USB driver is installed automatically as of Windows 7.

2. Configure the data channel in the Control Panel of the HMI device.

3. To set the transfer mode, click "Transfer" in the Loader.

4. Select the menu command "Online > Advanced download to device" in WinCC.

   The "Advanced download" dialog opens.

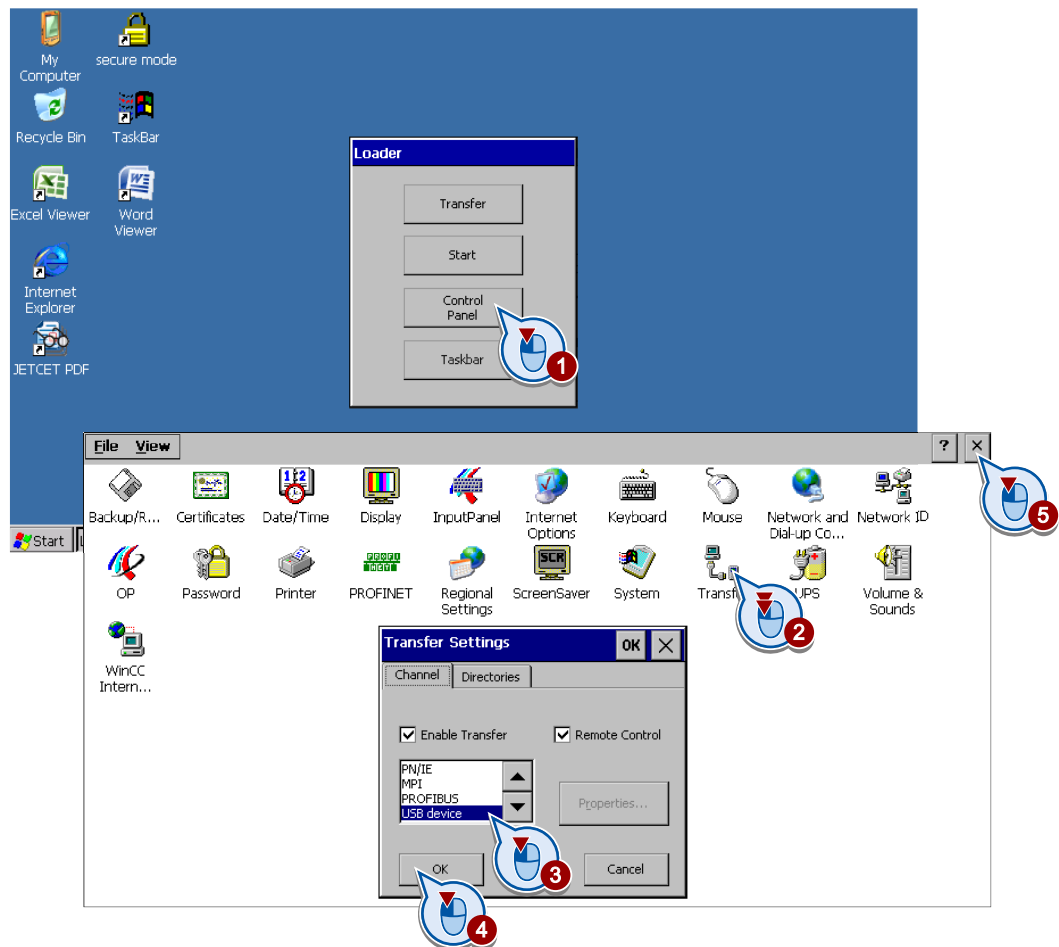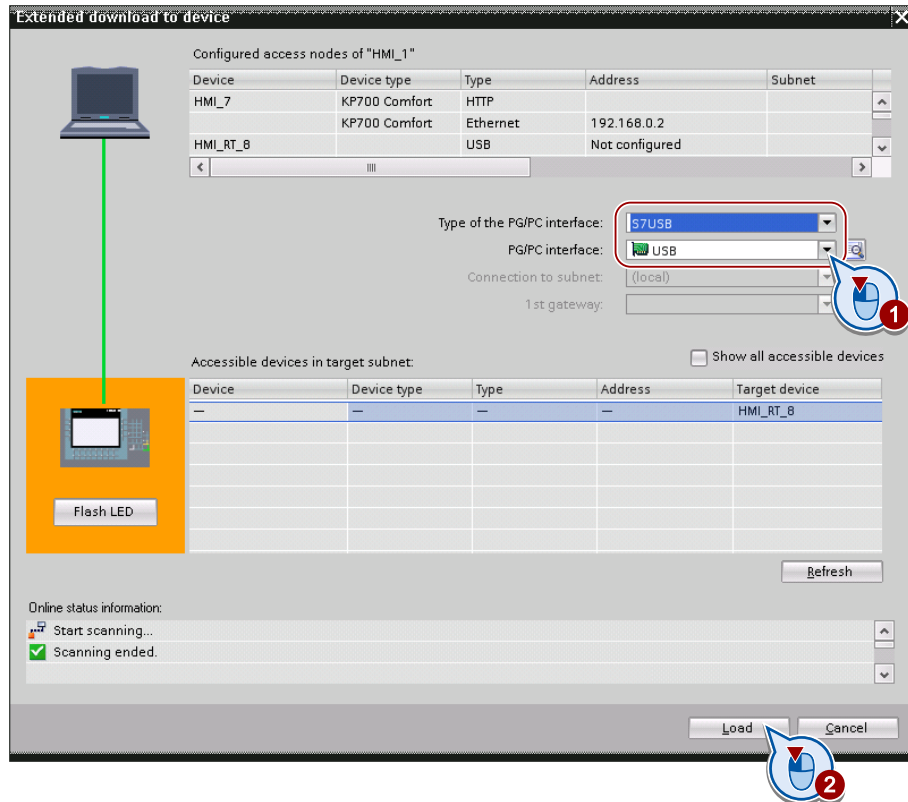5. Transfer the project to the HMI device.

   The "Load preview" dialog opens. The project is compiled at the same time. The result appears in the "Load preview" dialog.

6. If necessary, change the displayed default settings and then click "Load".

Result

The project is transferred to the selected HMI device. After successful transfer, the project is executable on the HMI device.

Additional information on the topic project transfer is available at:

- Operating instructions of the HMI device
- WinCC Information System under "Visualizing processes > Compile and download".

4.3   Using automatic backup

Introduction

The "Service concept" of the Comfort HMI devices is a continuous, automatic backup of all process-relevant HMI device data on the system memory card.

The automatic backup is activated automatically after you insert the system memory card and following a prompt. In the event of a device failure, insert the system memory card into a replacement device of the same design.
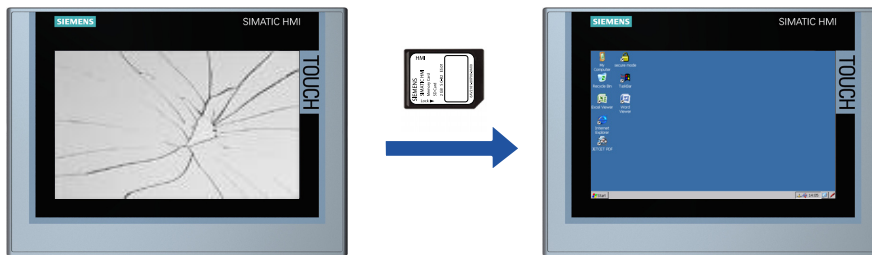
This way you reduce your system downtimes to a minimum. You require neither a PC nor a programming device.

You can also use automatic backup for "Series commissioning" of identical HMI devices. Once the data of the first HMI device are copied to the system memory card, insert the system memory card into all other HMI devices. The content of the system memory card is transferred to the HMI device.

Only the "SIMATIC HMI Memory Card" with a storage capacity of at least 2 GB is permitted as system memory card (order number: 6AV2181-8XP00-0AX0).

Activating automatic backup

To activate automatic backup as part of the initial commissioning on an HMI device, proceed as follows:

1. Switch on the power supply of the HMI device.

2. Wait until the HMI device has started.

3. Push the safety switch to position 2.

4. Insert the memory card into the slot provided for it.

5. Push the safety switch back to the initial position.

6. Confirm the "Use system card?" prompt asking you to activate automatic backup.

   An image of the device-internal memory is copied to the system memory card.

Note

No message during insertion of a defective system memory card

If you insert a defective system memory card, the message "Use system card?" will not appear.

Replace the system memory card with a new SIMATIC HMI Memory Card.

Note

**No message for system memory card from HMI device that is not an identical model**

If you insert a system memory card from a non-identical HMI device, the message "Use system card?" will not appear.

You can either overwrite the content of the system memory card with the data of the HMI device or remove the system memory card. As an alternative, you can create a backup of the system memory card.
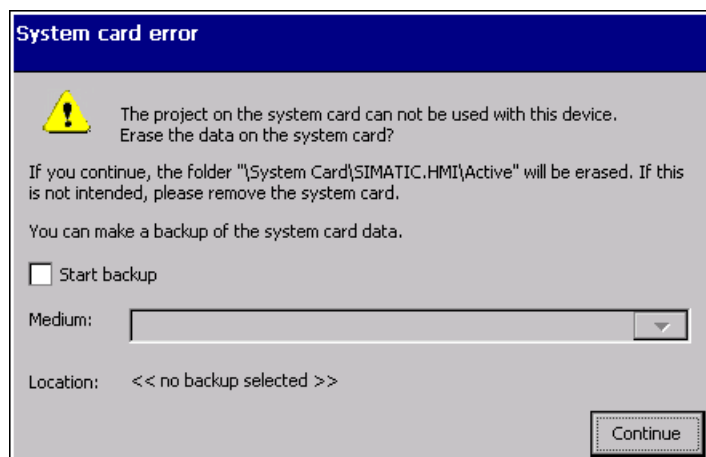
Result

Automatic backup is activated. The content of the system memory card is automatically synchronized with the content of the HMI device. All changes to the HMI device are also written to the system memory card.

For additional information on this topic, refer to the operating instructions of the HMI device in the chapter "Commissioning of device".

See also

Slots for memory cards (Page 21)

Use of WinCC together with STEP 7

<div style="text-align: right; font-size: xxx-large;">5</div>

5.1 Principles

WinCC can also be used together with STEP 7 V5. To ensure optimum use of all the features of the TIA Portal, we recommend that you use STEP 7 (TIA Portal).

The following basic scenarios occur:

- You are switching over from WinCC flexible to WinCC and want to continue using STEP 7 V5.

- You do not have a HMI project yet or are changing from a third-party product to WinCC and want to continue using STEP 7 V5.

In both scenarios, you have used STEP 7 V5 to program your plant. You want to use the tags you have created during this process in the WinCC project to configure the user interface.

5.2 Switchover from WinCC flexible to WinCC

Application case

You use WinCC flexible together with STEP 7 V5 and work integrated. When changing to the corresponding Comfort HMI device, you also change the configuration software. You want to transfer the STEP 7 tags into the migrated project in WinCC and still use STEP 7 V5.

Procedure

Proceed as follows:

1. Disintegrate the HMI project.

2. Migrate the HMI project to WinCC according to the description in the WinCC Information System.

3. Edit the migrated project based on the migration protocol.

4. Configure the settings for the screen adaptation and switch the HMI device in the HMI project, see "Switching screen from 4:3 to Widescreen (Page 29)".

Result

The STEP 7 tags are available in the WinCC project and can be used.

5.3 New project with WinCC or changing numerous tags

Application case

- You do not use WinCC flexible and want to create a new WinCC project. You want to transfer existing STEP 7 tags to the WinCC project.

- You are using a third-party product as configuration software together with STEP 7 V5. When you switch to a Comfort HMI device, you are also switching to WinCC. You want to transfer existing STEP 7 tags to the WinCC project.

- After the migration of a WinCC flexible project (see "Switchover from WinCC flexible to WinCC (Page 51)"), you want to conveniently modify a large number of tags.

Requirements

For this scenario, you need the WinCC TagConverter. The WinCC TagConverter converts the export files of SIMATIC Manager, Rockwell or Schneider to the WinCC import format. You can find the WinCC TagConverter with operating manual on the Internet (http://support.automation.siemens.com/WW/view/en/56078300).

Procedure

Proceed as follows:

1. Export the tags from STEP 7 V5.

2. Load the export file into the WinCC TagConverter.

3. Use the WinCC TagConverter to generate a WinCC import file.

4. Import the WinCC import file into your tag table in WinCC.

Result

The STEP 7 tags are available in the WinCC project and can be used.

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