

# Operator panels



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# Operator panels

## Introduction

### Introduction

#### Overview

A finely graded range of operator control and monitoring is available for local operator control and monitoring: From Key Panels, Basic Panels, through Comfort Panels and Multi Panels to Mobile Panels. HMI devices with all-round IP65/NEMA 4 protection for distributed configurations are available for applications with especially high requirements with regard to ruggedness.

#### Key Panels

Key Panels and Push Button Panels (PP) are the innovative alternative to conventionally wired key panels. Supplied pre-assembled and ready for installation, the bus-compatible operator panels are the key to drastically reducing wiring times when compared with conventional methods.

#### Basic Panels

Basic Panels offer basic HMI functionality for small machines and applications. These are available in various display sizes: as a 3" key panel (KP), as a 4" to 12" touch screen with additional keys (KTP), and as a 15" touch panel (TP). Versions can be selected for connection to PROFINET/Ethernet or PROFIBUS DP/MPI.

#### Comfort Panels

Comfort Panels offer high-end functionality for demanding applications. They offer high-resolution widescreen displays in sizes from 4" to 12", alternatively for touch screen operation (TP) or key operation (KP). In size 4" also with touch screen and additional keys (KTP).

The Comfort Panels are equipped with PROFINET/Ethernet as well as PROFIBUS DP/MPI interfaces.

#### Mobile Panels

The portable operator panels facilitate operator control and monitoring at the actual scene of the event with direct access and visual contact to the process. They provide simple and safe reconnection during operation (Mobile Panel 177 and Mobile Panel 277) or wireless freedom (Mobile Panel 277 (F) IWLAN) and can therefore be used flexibly on a machine or system.

#### Micro Panels

Designed specifically for applications with the SIMATIC S7-200 micro PLC, either with text display (TD) or pixel-graphic display, as operator panels (OP) with membrane keyboard or touch screen (TP).

#### Panels

##### Graphic Panels of the 70/170/270 series

With pixel graphic display in 4" or 6" for realistic presentation of the processes. Either as Touch Panels (TP) with touch-sensitive display, Operator Panels (OP) with membrane keyboard, or touch/key combination on the OP 177B 6" or TP 177B 4".

#### Multi Panels

##### 170/270/370 series

These can be used for operator control and monitoring in the same way as the panels, by means of touch screens or membrane keyboards. In addition, the Multi Panels (MPs) permit installation of additional applications and thus allow integration of several automation tasks on a single platform with the PLC WinAC MP software, for example. The 370 series also encompasses an HMI device with all-round IP65/NEMA 4 protection and 15" touch display for distributed configurations.

##### Multi Panel option: WinAC MP

The software PLC can be used in the 170/270 and 370 Multi Panels (exception: MP 370) and is ideal for complex processes in which one device must handle control and visualization tasks.

#### Benefits

##### *Rugged and compact for use at machine level*

With IP65/NEMA 4 degree of protection at the front, high EMC and extreme vibration resistance, the SIMATIC HMI operator panels are ideally suited for use at machine level in rough industrial environments. Thanks to their compact design with a shallow mounting depth, the stationary Operator Panels can be fitted anywhere, even where only restricted space is available. For distributed configurations, there are also devices available with all-round IP65/NEMA 4 protection.

The extremely rugged and shock-proof housing with degree of protection IP65 makes the Mobile Panels especially suitable for industrial applications. Their low weight and ergonomic design means that they are user-friendly and easy to operate.

##### *One configuration software for everything*

SIMATIC WinCC (TIA Portal) is a tool for the uniform configuration of all SIMATIC HMI Panels as well as PC-based systems. Graded versions are available for every task. The software permits simple and efficient configuration. Programming experience is not required.

Completed configurations can be reused within the family.

##### *Component of Totally Integrated Automation*

Siemens provides the complete modular system of matched components for automation solutions from one source and – with Totally Integrated Automation – one of the most successful automation concepts worldwide. SIMATIC WinCC (TIA Portal) is an integral component of this world. It offers crucial advantages. Thanks to the uniformity in configuration/programming, data management and communication, the engineering costs of an automation solution are significantly reduced.

##### *Open for a wide variety of automation systems*

Despite the consistent incorporation into the SIMATIC world, the Panels are nevertheless open for connection to PLCs from many different vendors. The standard delivery includes a comprehensive range of user-friendly drivers.

##### *Innovative operator control and monitoring*

The SIMATIC HMI Panels facilitate innovative operator control and monitoring combined with ruggedness, stability and simplicity. On the Comfort Panels and Multi Panels in particular, standard hardware and software interfaces, e.g. the MMC/SD/CF card, USB, Ethernet, PROFIBUS DP, Visual Basic scripts or customer-specific ActiveX controls, provide more flexibility and openness to the office world.

##### *Worldwide application*

The SIMATIC HMI Panels are ideally equipped for global use. Online language selection permits selection of up to 32 languages during operation simply by pressing a button. The wide variety of languages available also includes, for example, Asian logographic languages (Chinese, Taiwanese, Korean, Japanese) or Russian. The configuration interface of WinCC (TIA Portal) including the online help and the complete documentation is also multilingual. Up to 32 languages can be used in one project. And all this is complemented by global servicing and support from Siemens.

## Configuration overview

WinCC flexible engineering software				
	Micro	Compact	Standard	Advanced
<b>Basic Panels</b> <ul style="list-style-type: none"> <li>• KTP400 Basic</li> <li>• KTP600 Basic</li> <li>• KTP1000 Basic</li> <li>• TP1500 Basic</li> </ul>		<ul style="list-style-type: none"> <li>• 5)</li> <li>• 5)</li> <li>• 4)</li> <li>• 4)</li> </ul>	<ul style="list-style-type: none"> <li>• 5)</li> <li>• 5)</li> <li>• 4)</li> <li>• 4)</li> </ul>	<ul style="list-style-type: none"> <li>• 5)</li> <li>• 5)</li> <li>• 4)</li> <li>• 4)</li> </ul>
<b>Mobile Panels</b> <ul style="list-style-type: none"> <li>• Mobile Panel 177</li> <li>• Mobile Panel 277</li> <li>• Mobile Panel 277 (F) IWLAN</li> </ul>		<ul style="list-style-type: none"> <li>• 1)</li> </ul>	<ul style="list-style-type: none"> <li>• 1)</li> <li>• 2) 4)</li> <li>• 3)</li> </ul>	<ul style="list-style-type: none"> <li>• 1)</li> <li>• 2) 4)</li> <li>• 3)</li> </ul>
<b>Micro Panels</b> <ul style="list-style-type: none"> <li>• OP 73micro</li> <li>• TP 177micro</li> </ul>	<ul style="list-style-type: none"> <li>•</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>•</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>•</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>•</li> <li>•</li> </ul>
<b>Panels – 70 series</b> <ul style="list-style-type: none"> <li>• OP 73</li> <li>• OP 77A/B</li> </ul>		<ul style="list-style-type: none"> <li>•</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>•</li> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>•</li> <li>•</li> </ul>
<b>Panels – 170 series</b> <ul style="list-style-type: none"> <li>• TP 177A</li> <li>• TP/OP 177B</li> </ul>		<ul style="list-style-type: none"> <li>•</li> <li>• 1)</li> </ul>	<ul style="list-style-type: none"> <li>•</li> <li>• 1)</li> </ul>	<ul style="list-style-type: none"> <li>•</li> <li>• 1)</li> </ul>
<b>Panels – 270 series</b> <ul style="list-style-type: none"> <li>• TP 277/OP 277</li> </ul>			<ul style="list-style-type: none"> <li>• 2)</li> </ul>	<ul style="list-style-type: none"> <li>• 2)</li> </ul>
<b>Multi Panels – 170 series</b> <ul style="list-style-type: none"> <li>• MP 177</li> </ul>		<ul style="list-style-type: none"> <li>• 5)</li> </ul>	<ul style="list-style-type: none"> <li>• 4)</li> </ul>	<ul style="list-style-type: none"> <li>• 4)</li> </ul>
<b>Multi Panels – 270 series</b> <ul style="list-style-type: none"> <li>• MP 277</li> </ul>			<ul style="list-style-type: none"> <li>•</li> </ul>	<ul style="list-style-type: none"> <li>•</li> </ul>
<b>Multi Panels – 370 series</b> <ul style="list-style-type: none"> <li>• MP 377</li> </ul>			<ul style="list-style-type: none"> <li>• 3)</li> </ul>	<ul style="list-style-type: none"> <li>• 3)</li> </ul>
<b>WinAC MP</b> <ul style="list-style-type: none"> <li>• WinAC MP 177</li> <li>• WinAC MP 277</li> <li>• WinAC MP 377</li> </ul>		<ul style="list-style-type: none"> <li>• 5)</li> <li>• 5)</li> <li>• 5)</li> </ul>	<ul style="list-style-type: none"> <li>• 5)</li> <li>• 5)</li> <li>• 5)</li> </ul>	<ul style="list-style-type: none"> <li>• 5)</li> </ul>

- Possible

- 1) WinCC flexible 2005 or higher and TP 177B 4" with WinCC flexible 2008 and higher
- 2) WinCC flexible 2005 SP1 and higher
- 3) WinCC flexible 2007 and higher: Mobile Panel 277(F) IWLAN V1; WinCC flexible 2008 SP2 and higher: Mobile Panel 277(F) IWLAN V2
- 4) WinCC flexible 2008 and higher
- 5) WinCC flexible 2008 SP1 and higher

# Operator panels

## Introduction

### Introduction

#### Configuration overview (continued)

	WinCC (TIA Portal) Engineering Software			
	Basic	Comfort	Advanced	Professional
<b>Basic Panels</b> <ul style="list-style-type: none"> <li>• KP300 Basic</li> <li>• KTP400 Basic</li> <li>• KTP600 Basic</li> <li>• KTP1000 Basic</li> <li>• TP1500 Basic</li> </ul>	• • • • •	• • • • •	• • • • •	• • • • •
<b>Comfort Panels</b> <ul style="list-style-type: none"> <li>• KTP400/KP400 Comfort</li> <li>• TP700/KP700 Comfort</li> <li>• TP900/KP900 Comfort</li> <li>• TP1200/KP1200 Comfort</li> </ul>		• • • •	• • • •	• • • •
<b>Mobile Panels</b> <ul style="list-style-type: none"> <li>• Mobile Panel 177</li> <li>• Mobile Panel 277</li> <li>• Mobile Panel 277 (F) IWLAN</li> </ul>		• • •	• • •	• • •
<b>Panels – 70 series</b> <ul style="list-style-type: none"> <li>• OP73</li> <li>• OP77A</li> <li>• OP77B</li> </ul>		• • •	• • •	• • •
<b>Panels – 170 series</b> <ul style="list-style-type: none"> <li>• TP 177A</li> <li>• TP/OP 177B</li> </ul>		• •	• •	• •
<b>Panels – 270 series</b> <ul style="list-style-type: none"> <li>• TP 277/OP 277</li> </ul>		•	•	•
<b>Multi Panels – 170 series</b> <ul style="list-style-type: none"> <li>• MP 177</li> </ul>		•	•	•
<b>Multi Panels – 270 series</b> <ul style="list-style-type: none"> <li>• MP 277</li> </ul>		•	•	•
<b>Multi Panels – 370 series</b> <ul style="list-style-type: none"> <li>• MP 377</li> </ul>		•	•	•
<b>WinAC MP</b> <ul style="list-style-type: none"> <li>• WinAC MP 177</li> <li>• WinAC MP 277</li> <li>• WinAC MP 377</li> </ul>		• <sup>1)</sup> • <sup>1)</sup> • <sup>1)</sup>	• <sup>1)</sup> • <sup>1)</sup> • <sup>1)</sup>	• <sup>1)</sup> • <sup>1)</sup> • <sup>1)</sup>
• Possible				

<sup>1)</sup> from WinCC (TIA portal) V11 SP1

## Technology overview

	Basic Panels	Comfort Panels	Mobile Panels	Micro Panels
	KP300 Basic KTP400 Basic KTP600 Basic KTP1000 Basic TP1500 Basic	KTP400 Comfort KP400 Comfort KP700 Comfort TP700 Comfort TP900 Comfort KP900 Comfort TP1200 Comfort KP1200 Comfort	Mobile Panel 177/ Mobile Panel 277/Mobile Panel 277 (F) IWLAN	TD 200/ TD 400C1) OP 73micro TP 177micro
<b>Display</b>	KP300 Basic: 3.6" FSTN KTP400 Basic: 3.8" STN KTP600 Basic: 5.7" STN or 5.7" TFT KTP1000 Basic: 10.4" TFT TP1500 Basic: 15.1" TFT	KTP400/KP400 Comfort: 4.3" TFT Widescreen KP700/TP700 Comfort: 7.0" TFT Widescreen TP900/KP900 Comfort: 9.0" TFT Widescreen TP1200/KP1200 Comfort: 12.1" TFT Widescreen	Mobile Panel 177: 5.7" STN Mobile Panel 277: 7.5"/10.4" TFT 277(F) IWLAN: 7.5" TFT	TD 200/ TD 400C: text display OP 73micro: 3" LCD TP 177micro: 5.7" STN
Colors	KP300 Basic: black/white KTP400 Basic 4 gray levels KTP600 Basic 4-level grayscale or 256 colors KTP1000 Basic 256 colors TP1500 Basic 256 colors	16 million colors	Mobile Panel 177: 256 colors Mobile Panel 277 / 277(F) IWLAN: 64k colors	TD 200/TD 400C/ OP 73micro: monochrome TP 177micro: 4 shades of blue
<b>Operator controls</b>				
Membrane keyboard only	• (KP300 Basic)	• (KP400/KP700/KP900/ KP1200 Comfort)	–	• (TD 200/TD 400C/ OP 73 micro)
Touch screen only	• (TP1500 Basic)	• (TP700/TP900/TP1200 Comfort)	–	• (TP 177micro)
Membrane keyboard and Touch	• (KTP400/KTP600/ KTP1000 Basic)	• (KTP400 Comfort)	•	–
<b>Interfaces/protocols</b>				
Serial / MPI / PROFIBUS DP	• <sup>11)</sup> / • <sup>11)</sup> / • <sup>11)</sup>	• / • / •	• <sup>7)</sup> / • <sup>7)</sup> / • <sup>7)</sup>	• / • / –
USB / Ethernet / WLAN	– / • <sup>12)</sup> / –	• / • / –	• <sup>8)</sup> / • <sup>4)</sup> / • <sup>9)</sup>	– / – / –
Multimedia card / CF Card / PC card slot	– / – / –	• / – / –	• / – / –	– / – / –
<b>Memory</b> (available for user data)	KP300/KTP400 Basic/KTP600 Basic: 512 KB KTP1000 Basic/TP1500 Basic: 1024 KB	KTP400/KP400 Comfort: 4 MB KP700/TP700/KP900/TP9 00/ KP1200/TP1200 Comfort: 12 MB	Mobile Panel 177: 2048 KB Mobile Panel 277/277(F) IWLAN: 6 MB	TD 200/TD 400C/ OP 73micro: 128 KB TP 177micro: 256 KB
<b>Connection to controller</b>				
SIMATIC S7 / WinAC	• / •	• / •	• / • <sup>10)</sup>	S7-200 only
SIMATIC S5 / 505	• <sup>13)</sup> / • <sup>13)</sup>	– / –	• <sup>10)</sup> / • <sup>10)</sup>	– / –
SINUMERIK / SIMOTION <sup>14)</sup>	– / –	– / –	• <sup>10)</sup> / • <sup>10)</sup>	– / –
Third-party controllers	•	•	• <sup>10)</sup>	–

- Available
- Not available

- 1) The TD 100C/200/200C/400C is configured using MicroWIN
- 2) Only with OP 77B
- 3) Not with TP 177A; TP/OP 177B (S5 only)
- 4) Not with Mobile Panel 177DP
- 5) With OP 73 and OP 77A, connection only possible to S7-200/300/400
- 6) Only with TP/OP 177B color
- 7) Only with Mobile Panel 177 DP/Mobile Panel 277
- 8) Only with Mobile Panel 277/277(F) IWLAN
- 9) Only with Mobile Panel 277(F) IWLAN
- 10) Not with Mobile Panel 277(F) IWLAN
- 11) Only with KTP600 Basic color DP and KTP1000 Basic color DP
- 12) Not with KTP600 Basic color DP and KTP1000 Basic color DP
- 13) Not with KP300 Basic
- 14) Only available when configuring with WinCC flexible

# Operator panels

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#### Configuration overview (continued)

	Panels			Multi Panels		
	70 series	170 series	270 series	170 series	270 series	370 series
	OP 73 OP 77A/B	TP 177A TP/OP 177B	TP/OP 277	MP 177	MP 277	MP 377
<b>Display</b>	OP 73: 3" LCD OP 77A/B: 4.5" LCD	TP 177B 4": 4.3" TFT widescreen otherwise: 5.7" STN	5.7" TFT	6" TFT	7.5"/10.4" TFT	12"/15"/19" TFT
Colors	Monochrome	TP 177A: 4 shades of blue TP/OP 177B: 4 shades of blue/ 256 colors	256 colors	65535 colors	65535 colors	65535 colors
<b>Operator controls</b>						
Membrane keyboard	•	• (TP 177B 4" and OP 177B)	•	–	•	•
Touch screen	–	•	•	•	•	•
Membrane keyboard and Touch	–	• (TP 177B 4" and OP 177B)	–	–	–	–
<b>Interfaces/protocols</b>						
Serial / MPI / PROFIBUS DP	• / • / •	• / • / •	• / • / •	• / • / •	• / • / •	• / • / •
USB / Ethernet / WLAN	• <sup>2)</sup> / – / –	• / • <sup>6)</sup> / –	• / • / –	• / •	• / •	• / •
Multimedia card / CF Card / PC card slot	• <sup>2)</sup> / – / –	• / • <sup>3)</sup> / –	• / – / –	• / –	• / –	• / •
<b>Memory</b> (available for user data)	OP 73/OP 77A: 256 KB OP 77B 1024 KB	TP 177A 512 KB TP/OP 177B: 2 MB	4 MB	2 MB	6 MB	12 MB
<b>Connection to controller</b>						
SIMATIC S7 / WinAC	• / •	• / •	• / •	• / •	• / •	• / •
SIMATIC S5 / 505	• <sup>5)</sup> / • <sup>5)</sup>	• <sup>3)</sup> / • <sup>3)</sup>	• / •	• / •	• / •	• / •
SINUMERIK <sup>7)</sup> / SIMOTION <sup>7)</sup>	– / –	• / • <sup>3)</sup>	• / •	• / •	• / •	• / •
Third-party controllers	• <sup>6)</sup>	• <sup>3)</sup>	•	•	•	•

• Available

– Not available

1) The TD 100C/200/200C/400C is configured using MicroWIN

2) Only with OP 77B

3) Not with TP 177A; TP/OP 177B (S5 only)

4) Not with Mobile Panel 177DP

5) With OP 73 and OP 77A, connection only possible to S7-200/300/400

6) Only with TP/OP 177B color

7) Only available when configuring with WinCC flexible

**Functionality (configuration with WinCC V11)**

	Basic Panels	Comfort Panels	Mobile Panels
	KP300 KTP400Basic KTP600Basic KTP1000Basic TP1500Basic	KTP400 Comfort KP400/700/900/ 1200 Comfort TP700/900/1200 Comfort	Mobile Panel 177/ Mobile Panel 277/277 (F) IWLAN
Number of messages	200	KTP400/KP400 Comfort: 2000 All other Comfort Panels: 4000	Mobile Panel 177: 2000 Mobile Panel 277 / 277(F) IWLAN: 4000
Alarm buffer (number of entries)	256	KTP400/KP400 Comfort: 256 All other Comfort Panels: 1024	Mobile Panel 177: 256 Mobile Panel 277 / 277(F) IWLAN: 512
Recipes	5	KTP400/KP400 Comfort: 100 All other Comfort Panels: 300	Mobile Panel 177: 100 Mobile Panel 277 / 277(F) IWLAN: 300
Process screens	50	500	500
Bar graphs/curve diagrams (full graphic)	• / •	• / •	• / •
Tags	KP300/KTP400 Basic: 250 KTP600/1000 Basic/TP1500 Basic: 500	KTP400/KP400Comfort: 1024 All other Comfort Panels: 2048	Mobile Panel 177: 1024 Mobile Panel 277 / 277(F) IWLAN: 2048
Logging	–	•	• 1)
Visual Basic Scripts	–	•	• 1)
Online languages	5	32	Mobile Panel 177: 5 Mobile Panel 277/277(F) IWLAN: 16
User administration (security)	•	•	•
Print functions	–	•	•
PG functions (STATUS/CONTROL) with SIMATIC S5/S7	–	•	• 1)

- Available
- Not available

1) Only Mobile Panel 277/277(F) IWLAN

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#### Functionality (configuration with WinCC (TIA Portal))

	Panels			Multi Panels		
	70 series	170 series	270 series	170 series	270 series	370 series
	OP 73 OP 77A/ OP 77B	TP 177A TP/OP 177B	TP 277 OP 277	MP 177	MP 277	MP 377
Number of messages	OP 73: 500 OP 77A/ OP 77B: 1000	TP 177A: 1000 TP/OP 177B: 2000	4000	2000	4000	4000
Message buffer (number of entries)	OP 73: 150 OP 77A/ OP 77B: 256 <sup>3)</sup>	TP 177A <sup>3)</sup> / TP/OP 177B: 256	512	256	512	1024
Recipes	OP 77A: 5 OP 77B: 100	TP 177A: 5 <sup>4)</sup> TP/OP 177B: 100	300	100	300	500
Process screens	500	TP 177A: 250 TP/OP 177B: 500	500	500	500	500
Bar graphs/curve diagrams (full graphic)	• / –	• / • <sup>4)</sup>	• / •	• / •	• / •	• / •
Tags	1000	TP 177A: 500 TP/OP 177B: 1000	2048	1000	2048	4096
Logging	–	–	•	–	•	•
Visual Basic Scripts	–	–	•	–	•	•
Online languages	5	5	16	16	16	16
User administration (security)	•	•	•	•	•	•
Print functions	• <sup>2)</sup>	• <sup>1)</sup>	•	•	•	•
PG functions (STATUS/CONTROL) with SIMATIC S5/S7	–	• <sup>1)</sup>	•	•	•	•

- Available
- Not available

<sup>1)</sup> Except TP 177A

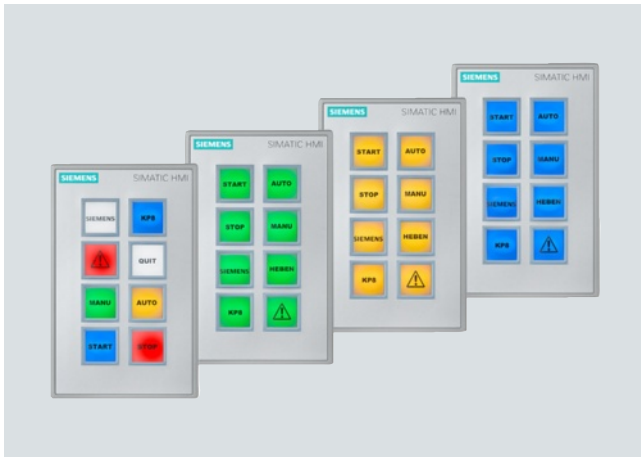
<sup>2)</sup> Only with OP 77B

<sup>3)</sup> Non-retentive

<sup>4)</sup> On TP 177A from WinCC flexible 2007



### Overview



#### SIMATIC HMI Key Panel KP8 PN/KP8F PN

- The KP8 PN and KP8F PN Key Panels are the innovative successor to the PP7 Push Button Panel
- The following two versions are available:
  - A PROFINET version with 8 large backlit keys each
  - A PROFINET Failsafe version (with connection option, e. g. for an emergency stop button) with 8 large backlit keys each
- High flexibility in the smallest space at an extremely reasonable price
- On the rear, 8 I/O PINs are available as standard. These I/O PINs can be used for the connection of additional control elements.

### Benefits

Machine operation is rarely possible without hard-wired elements such as emergency stop units, indicator lights, or key-operated switches. Extension units are available for the integration of such operator controls. They are mounted on the side of the PRO device. The new SIMATIC HMI Key Panels facilitate the integration of keys and indicator lights considerably. The operator controls must now no longer be individually wired. Instead, control is performed directly via PROFINET. Each extension unit of the HMI PRO devices can accommodate up to two KP8 PN or KP8F PN. Up to five colors are thus available for the direct keys. Of course, you can connect further elements such as emergency stop units <sup>1)</sup> and key-operated switches on the rear side of the Key Panel.

The combination of a SIMATIC HMI PRO device and KP8 PN, KP8F PN offers the following advantages:

- No control cabinet required
- Low cabling overhead
- Optimally coordinated design

<sup>1)</sup> Safety version

### Application

#### Safety

With the SIMATIC HMI KP8F PN, there is also a version available for use in safety-related applications. The device also offers two safety-related inputs, and if used with one channel it achieves safety standard SIL 2, with two channels it achieves SIL 3. Depending on the safety level, one or two emergency stop switches can be connected. Through the support of PROFINET Shared Device, it can even address two controllers simultaneously.

#### Empty front

An empty front is available as accessory. It has the same look & feel as the SIMATIC HMI Key Panels and can be seamlessly and modularly added on to a KP8 PN or KP8F PN. The empty front is a purely mechanical version without electronics. It is only used for the installation of long-stroke keys or emergency stop and key-operated switches. The empty front is perforated at the rear so that up to 4 holes can be punched out for a 22.5 mm standard control element without the need for cutting tools.

#### Use in PRO devices

Both versions are the ideal supplement for the SIMATIC HMI PRO devices with full IP65 protection, because they can be installed in the associated extension units due to their customized dimensions.

# Operator panels

## Key Panels

### SIMATIC HMI KP8/KP8F

#### Design

##### SIMATIC HMI KP8 PN/KP8F PN

With the SIMATIC HMI KP8 PN and KP8F PN, Siemens offers two new key operator panels with eight large, easily operable keys. The devices are supplied pre-assembled and ready for installation and thus no time-consuming individual mounting and wiring is required as for conventional operator panels.

Typical fields of application for key operator panels are applications that require the deterministic transmission of operator commands. For optimum user friendliness, they offer tactile feedback when a key is pressed and they can be freely configured. In addition, the intensity and color of the LED backlighting of all keys can be adapted. The configuration of the colors (white, green, red, yellow, blue) enhances user friendliness, the alterable brightness enhances readability under difficult lighting conditions such as extreme brightness. All keys can be individually labeled and adapted to the application by means of two slide-in labels each. The connection to the control is implemented via PROFINET. An integrated 2-port PROFINET switch facilitates the configuration of a linear topology without additional modules.

The KP8 PN and the KP8F PN continue to offer 8 integrated I/Os at the rear, via which additional operator controls such as short-stroke keys can be connected. In contrast to individual components, no time-consuming assembly and wiring are required.

- 8 large illuminated pushbuttons with good tactile feedback, which can even be operated with gloves and are therefore suitable for harsh industrial environments
- Simple inscribable keys using labeling strips
- Integrated multicolor LEDs for free color selection per key (white, green, red, yellow, blue) which indicate the state of the machine
- 8 I/O PINs at the rear can be used as input or output
- 2 x RJ45 with integrated switch --> no additional costs for network integration
- 24 V DC can be looped through easily
- Integrated diagnostics system
- F version offers the option of connecting a SIL3 emergency stop unit at the rear
- Design of empty enclosure for easy mounting of 22.5 mm control elements
- PROFINET Shared Device (KP8F PN)
- MRP (Medium Redundancy Protocol)
- One or two emergency stop units (SIL level 2/3 ) can be connected to the Safety version of KP8F.
- Due to the integrated PROFINET switch, no conventional main switch is required and thus less hardware is required.
- Compatible with SIMATIC HMI PRO devices

#### Technical specifications

	6AV3 688-3AY36-0AX0 KP8 PN	6AV3 688-3AF37-0AX0 KP8F PN
<b>Control elements</b>		
Function keys, programmable	8 function keys	8 function keys
Membrane keyboard	Yes	Yes
Connection for mouse/keyboard/barcode reader	- / - / -	- / - / -
<b>Type of output</b>		
Color modes for LED	5; red, green, blue, white, yellow	5; red, green, blue, white, yellow
<b>Ambient conditions</b>		
Operating temperature		
• Operation (vertical installation)	0 °C to +55 °C	0 °C to +55 °C
• Operation (max. tilt angle)	0 °C to +45 °C	0 °C to +45 °C
Storage/transport temperature		
• Transport, storage	-20 °C to +60 °C	-20 °C to +60 °C
Relative humidity		
• max. relative humidity	95 %	95 %
maximum permissible angle of inclination without external ventilation	+/- 45 °	+/- 45 °
<b>Dimensions and weight</b>		
Dimensions		
• Mounting cutout/device depth (W x H)	67 mm x 129 mm	67 mm x 129 mm

#### Ordering data

<b>SIMATIC HMI Key Panel KP8 PN</b> A	<b>6AV3 688-3AY36-0AX0</b>
Push Button Panel for PROFINET with 8 short-stroke keys with multi-colored LEDs, 8 configurable DI/DO pins, 24 V DC can be looped through	
<b>SIMATIC HMI Key Panel KP8F PN</b> A	<b>6AV3 688-3AF37-0AX0</b>
Push Button Panel for PROFINET with PROFI-safe, 8 short-stroke keys with multi-colored LEDs, 8 configurable DI/DO pins, 24 V DC can be looped through, 2 safety inputs	

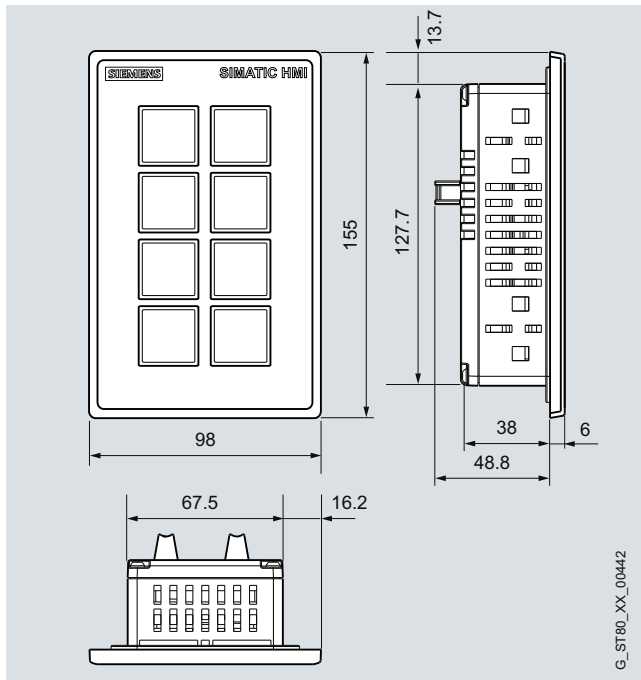
#### Order No.

<b>Empty front</b>	<b>6AV3 688-3XY38-3AX0</b>
Empty front for KP8 and KP8F in combination with the HMI PRO devices	
<b>Connector set 12-pin for KP8 PN</b>	<b>6AV6 671-3XY38-4AX0</b>
10 units per packaging unit	
<b>Connector set 16-pin for KP8F PN</b>	<b>6AV6 671-3XY48-4AX0</b>
10 units per packaging unit	

A: Subject to export regulations: AL: N and ECCN: EAR99H

### Dimensional drawings

All specifications in mm. Panel cutout see technical specifications.



SIMATIC HMI Key Panel KP8

### More information

Further information can be found on the Internet at:

[www.siemens.com/simatic-key-panels](http://www.siemens.com/simatic-key-panels)

#### Note:

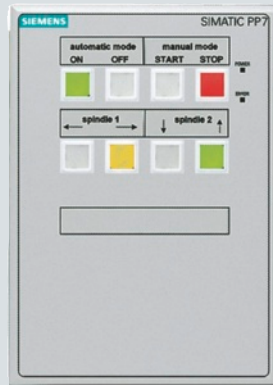
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# Operator panels

## Key Panels

### SIMATIC PP7

#### Overview



SIMATIC Push Button Panels are the innovative alternative to conventional operator panels for easy and direct control of machines:

- Pre-fabricated and ready for operation; simply connect to the control and all buttons and lamps are ready for immediate use
- Connection to any type of control via a bus cable (PROFIBUS DP as "standard slave" or MPI)
- Fitted with short-stroke keys, additional digital inputs and slots for 22.5 mm standard components

#### Benefits

- Up to 90 % time savings: Pushbuttons, switches and lamps do not have to be fitted and wired individually
- Use of standard cables, for example, makes configuration and startup easier
- No configuration tool required
- Service-friendly thanks to rear display to indicate operating states and messages in plain text, without programming device
- Quick and easy machine operation thanks to multi-colored indicator lights
- User-friendly labeling option for pushbuttons and lamps using slide-in labels
- As the 22.5 mm standard elements can be connected directly on the panel, no additional wiring and I/O modules are required

#### Application

The rugged PP7 Push Button Panel is designed for simple and straightforward machine operation.

It can be used wherever operator control and monitoring functions cannot be carried out without keys and lamps, e.g. on control consoles for machines and plants in the food and beverage industry where smooth fronts are necessary to facilitate cleaning. Even in special mechanical equipment manufacture, the push button panels can be used to easily set up standard operator panels that are then amenable to fast, flexible and modular expansion. The key and lamp functions can be changed later at any time without having to modify the wiring.

#### Design

PPs stand out because of their compact construction:

- Preassembled with 8 short-stroke keys that can be labeled individually with slide-in labels
- Smooth, easy to clean front; the front is resistant to various oils, greases and standard detergents
- Long-life, multi-colored surface LEDs in all short-stroke keys
- Additional digital inputs for flexible expansion
- Pre-perforated cut-outs for 22.5 mm standard auxiliary elements (buttons, lamps, Emergency Stop, key switch)
- Rear-side display with miniature keyboard for displaying operating status and changing standard settings in text format
- The PP7 fits seamlessly into the series
- Maintenance-friendly, no battery required
- All parameters are stored on a memory module, which can be easily replaced

**Function**

- LED color modes (e.g., red, green, yellow, red-flashing, green-flashing, yellow-flashing)
- Integrated flashing rate for LED
- Integrated diagnostic functions
- Integrated lamp and key test (also for additional digital inputs)
- Menu-assisted parameterization via rear display with miniature keyboard
- Short-stroke keys and digital inputs are also parameterizable as switches
- Parameterizable pulse stretching for short-stroke keys and digital inputs
- PROFIBUS DP standard slave

**Integration**

The Push Button Panels can be connected to

- SIMATIC S7-200/-300/-400, WinAC Software and Slot PLC via MPI and PROFIBUS DP
- SIMATIC S5 (AG95/master or IM 308C) only via PROFIBUS DP
- PROFIBUS DP standard master, any vendor (e.g. Allen Bradley, etc.)

**System interfaces**

<b>Controller</b>	<b>SIMATIC PP7 <sup>1)</sup></b>
<b>Target hardware (PROTOCOL)</b> (connector/physics)	<b>Connection via DP/MPI</b>

**SIMATIC S7/SIMATIC WinAC (MPI as master) <sup>2)</sup>**

via MPI interface with <b>S7-200/-300/-400/ WinAC Software/Slot PLC</b> (9-pin socket/RS 485) <sup>3) 4)</sup>	<b>Bus connector, bus cable and MPI network</b> (see Catalog ST 70/IK PI)
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**SIMATIC S5/S7 (PROFIBUS DP as standard slave)**

via PROFIBUS with max. 1 x <b>S7-200</b> (CPU 215-DP) on MPI protocol <b>S7-300/-400</b> with integrated PROFIBUS interface <b>S7-300</b> with CP 342-5 <b>S7-400</b> with CP 443-5	<b>PROFIBUS <sup>5)</sup></b> (see Catalog ST 70/IK PI)
via PROFIBUS DP with <b>S5-95U/PROFIBUS DP master</b> (6ES5 095-8ME02) <b>S5-115U/-135U/-155U</b> with IM 308C/IM 308B <b>S5-115U/-135U/-155U</b> with CP 5430/CP 5431	<b>PROFIBUS <sup>5)</sup></b> (see Catalog ST 70/IK PI)

**Non-Siemens controllers (PROFIBUS DP master)**

via PROFIBUS DP	<b>PROFIBUS <sup>5)</sup></b> (see Catalog ST 70/IK PI)
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<sup>1)</sup> PP7 suitable up to 1.5 Mbit/s

<sup>2)</sup> Standard PG/PC MPI cable cannot be used

<sup>3)</sup> S7-200 only via MPI (CPU 212 not possible)

<sup>4)</sup> S7-200 CPU 215-DP also possible on PROFIBUS DP interface via MPI protocol

<sup>5)</sup> Bus connector: 6GK1 500-0EA02

**Note:**

The standard PG/PC MPI cable (6ES7 901-0BF00-0AA0) cannot be used to connect a PP and a CPU.

**Technical specifications**

<b>6AV3 688-3AA03-0AX0</b>	
<b>General system features</b>	
Short lift keys/additional inputs as pushbuttons or switches	Yes
max. pulse extension for short-stroke keys and digital inputs	1 000 ms
Release input	No
<b>Control elements</b>	
Control elements	Membrane keyboard
Function keys, programmable	8 function keys, 8 with LEDs
Membrane keyboard	Yes
<b>Supply voltage</b>	
Input voltage	
• permissible range	+18 V to +30 V DC
• Supply voltage	24 V DC
<b>Input current</b>	
Rated current	0.2 A
Power	5 W
<b>Type of output</b>	
LED colors	Red, yellow, green
Color modes for LED	3
Number of LEDs	8
<b>Digital inputs</b>	
Number of inputs	4
Voltage (DC)	24 V
<b>Test commissioning functions</b>	
Flashing frequency for LEDs	0.5 Hz
Pushbutton and lamp test	Yes
<b>Ambient conditions</b>	
Operating temperature	
• Operation (vertical installation)	0 °C to +55 °C
• Operation (max. tilt angle)	0 °C to +55 °C
Storage/transport temperature	
• Transport, storage	-20 °C to +70 °C
Relative humidity	
• max. relative humidity	95 %
Mounting position	vertical
maximum permissible angle of inclination without external ventilation	+/- 35 °
<b>Degree and class of protection</b>	
Front	IP65
Rear	IP20
<b>Standards, approvals, certificates</b>	
Certifications	CE, FM Class I Div. 2, UL, CSA
<b>Mechanics/material</b>	
Lifetime, typ.	
• Short-stroke keys (in switching cycles)	1500000
• LEDs (ON period)	100 %
<b>Dimensions and weight</b>	
Dimensions	
• Front of enclosure (W x H)	144 mm x 204 mm
• Mounting cutout/device depth (W x H)	130 mm x 190 mm / 53 mm device depth
<b>Weight</b>	
• Weight	0.8 kg

# Operator panels

## Key Panels

### SIMATIC PP7

#### Ordering data

**SIMATIC PP7** A **6AV3 688-3AA03-0AX0**

Push Button Panel incl. mounting accessories:

- 8 x short-stroke keys
- 8 x surface lighting diodes
- 4 x DI terminals (24 V)
- Max. 5 x 22.5 mm pre-perforated cutouts for additional components

**Documentation** to be ordered separately

**Accessories** see HMI accessories

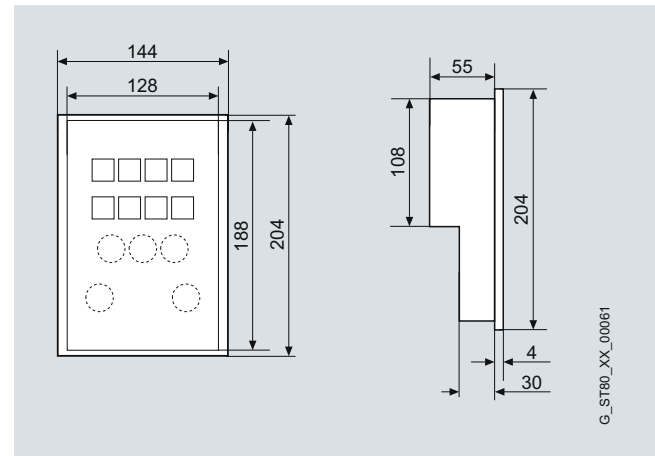
A: Subject to export regulations: AL: N and ECCN: EAR99H

#### Note:

Commercially available printing film (0.13 to 0.16 mm strength) can be used as labeling strips for the keyboard. Word templates are enclosed with the manual on a diskette.

#### Dimensional drawings

All specifications in mm. Panel cutout see technical specifications.



SIMATIC PP7

#### More information

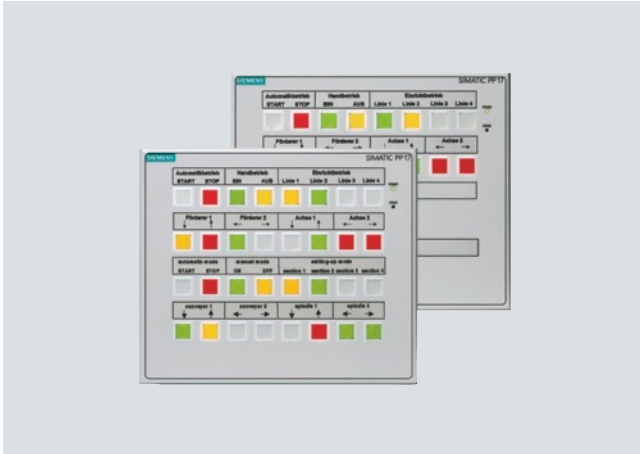
Additional information is available on the Internet at:

[www.siemens.com/simatic-pbp](http://www.siemens.com/simatic-pbp)

#### Note:

Do you require a specific modification or extension to the products described here? Under "Customized products", you can find information about additional and generally available products for the sector, and about the possibilities for customized modification and adaptation.

### Overview



SIMATIC Push Button Panels are the innovative alternative to conventional operator panels for easy and direct control of machines:

- Pre-fabricated and ready for operation; simply connect to the control and all buttons and lamps are ready for immediate use
- Connection to any type of control via a bus cable (PROFIBUS DP as "standard slave" or MPI)
- **PP17-I:**  
Fitted with short-stroke keys, additional digital inputs and outputs and slots for 22.5 mm standard elements
- **PP17-II:**  
Fitted with short-stroke keys, additional digital inputs and outputs and much more

### Benefits

- Up to 90 % time savings: Pushbuttons, switches and lamps do not have to be fitted and wired individually
- Use of standard cables, for example, makes configuration and startup easier
- No configuration tool required
- Service-friendly thanks to rear display to indicate operating states and messages in plain text, without programming device
- Quick and easy machine operation thanks to multi-colored indicator lights
- User-friendly labeling option for pushbuttons and lamps using slide-in labels
- As the 22.5 mm standard elements can be connected directly on the panel, no additional wiring and I/O modules are required

### Application

The rugged PP17 Push Button Panels are designed for easy and straight-forward operation of the machine.

They can be used wherever keys and lamps are essential components in operator control and monitoring. In the food processing industry, for example, on machines and systems on which smooth fronts are required for easier cleaning. Even in special mechanical equipment manufacture, the push button panels can be used to easily set up standard operator panels that are then amenable to fast, flexible and modular expansion. The key and lamp functions can be changed later at any time without having to modify the wiring.

### Design

PPs stand out because of their compact construction:

- Preassembled with short-stroke keys that can be labeled individually - also in color - with slide-in labels
- Smooth, easy to clean front; the front is resistant to various oils, greases and standard detergents
- Long-life, multi-colored surface LEDs in all short-stroke keys
- Additional digital inputs and outputs for flexible expansion
- Pre-perforated cut-outs for 22.5 mm standard auxiliary elements (buttons, lamps, etc.) for PP17-I
- Rear-side display with miniature keyboard for displaying operating states and changing standard settings in text format
- Central enabling input
- The PP17 can be laterally mounted
- Maintenance-friendly, no battery required
- All parameters are stored on a memory module, which can be easily replaced



# Operator panels

## Key Panels

### SIMATIC PP17

#### Function

- LED color modes (e.g. red, green, yellow, red-flashing, green-flashing, yellow-flashing)
- Integrated flashing frequency for digital outputs and LED
- Integrated diagnostic functions
- Integrated lamp and key test (also for additional digital inputs 24 V inputs and outputs)
- Menu-assisted parameterization via rear display with miniature keyboard
- Short-stroke keys and digital inputs are also parameterizable as switches
- Parameterizable pulse stretching for short-stroke keys and digital inputs (max. 1000 ms)
- PROFIBUS DP standard slave

#### Integration

The Push Button Panels can be connected to:

- SIMATIC S7-200/-300/-400, WinAC Software and Slot PLC via MPI and PROFIBUS DP
- SIMATIC S5 (AG95/master or IM 308C) only via PROFIBUS DP
- PROFIBUS DP standard master, any vendor (e.g. Allen Bradley, etc.)

#### System interfaces

Controller	SIMATIC PP17 <sup>1)</sup>
Target hardware (PROTOCOL) (connector/physics)	Connection via DP/MPI
<b>SIMATIC S7/SIMATIC WinAC (MPI as master)<sup>2)</sup></b>	
via MPI interface with <b>S7-200/-300/-400/ WinAC Software/Slot PLC</b> (9-pin socket/RS 485), <sup>3)4)</sup>	<b>Bus connector, connecting cable and MPI network</b> (see Catalog ST 70/IK PI)
<b>SIMATIC S5/S7 (PROFIBUS DP as standard slave)</b>	
via PROFIBUS with max. 1 x <b>S7-200</b> (CPU 215-DP) on MPI protocol <b>S7-300/-400</b> with integrated PROFIBUS interface <b>S7-300</b> with CP 342-5 <b>S7-400</b> with CP 443-5	<b>PROFIBUS<sup>5)</sup></b> (see Catalog ST 70/IK PI)
via PROFIBUS DP with <b>S5-95U/PROFIBUS DP master</b> (6ES5 095-8ME02) <b>S5-115U/-135U/-155U</b> with IM 308C/IM 308B <b>S5-115U/-135U/-155U</b> with CP 5430/CP 5431	<b>PROFIBUS<sup>5)</sup></b> (see Catalog ST 70/IK PI)
<b>Non-Siemens controllers (PROFIBUS DP master)</b>	
via PROFIBUS DP	<b>PROFIBUS<sup>5)</sup></b> (see Catalog ST 70/IK PI)

1) PP17 suitable up to 12 Mbit/s

2) Standard PG/PC MPI cable cannot be used

3) S7-200 only via MPI (CPU 212 not possible)

4) S7-200 CPU 215-DP also possible on PROFIBUS DP interface via MPI protocol

5) Bus connector: 6GK1 500-0EA02

#### Note:

The standard PG/PC MPI cable (6ES7 901-0BF00-0AA0) cannot be used to connect a PP and a CPU.

#### Technical specifications

	6AV3 688-3CD13-0AX0	6AV3 688-3ED13-0AX0
<b>Product type designation</b>	PP17-I	PP17-II
<b>General system features</b>		
Short lift keys/additional inputs as pushbuttons or switches	Yes	Yes
max. pulse extension for short-stroke keys and digital inputs	1 000 ms	1 000 ms
Release input	Yes	Yes
<b>Control elements</b>		
Control elements	Membrane keyboard	Membrane keyboard
Function keys, programmable	16 function keys, 16 with LEDs	32 function keys, 32 with LEDs
<b>Supply voltage</b>		
Input voltage		
• permissible range	+18 V to +30 V DC	+18 V to +30 V DC
• Supply voltage	24 V DC	24 V DC
<b>Input current</b>		
Rated current	0.4 A	0.4 A
Power	10 W	10 W
<b>Type of output</b>		
LED colors	Red, yellow, green	Red, yellow, green
Color modes for LED	3	3
Number of LEDs	16	32
<b>Digital inputs</b>		
Number of inputs	16	16
Voltage (DC)	24 V	24 V
<b>Digital outputs</b>		
Total power	12 W	12 W
Number of outputs	16	16
in groups of	4	4
Total current (per group), max.	500 mA	500 mA
Short-circuit protection	Yes	Yes
<b>Test commissioning functions</b>		
Flashing frequency for LEDs	0.5 Hz	0.5 Hz
Flashing frequency for digital outputs	0.5 Hz or 2 Hz	0.5 Hz or 2 Hz
Pushbutton and lamp test	Yes	Yes
<b>Ambient conditions</b>		
Operating temperature		
• Operation (vertical installation)	0 °C to +55 °C	0 °C to +55 °C
• Operation (max. tilt angle)	0 °C to +55 °C	0 °C to +55 °C
Storage/transport temperature		
• Transport, storage	-20 °C to +70 °C	-20 °C to +70 °C
Relative humidity		
• max. relative humidity	95 %	95 %
Mounting position	vertical	vertical
maximum permissible angle of inclination without external ventilation	+/- 35 °	+/- 35 °



**Technical specifications** (continued)

	<b>6AV3 688-3CD13-0AX0</b>	<b>6AV3 688-3ED13-0AX0</b>
<b>Degree and class of protection</b>		
Front	IP65	IP65
Rear	IP20	IP20
<b>Standards, approvals, certificates</b>		
Certifications	CE, FM Class I Div. 2, UL, CSA	CE, FM Class I Div. 2, UL, CSA
<b>Mechanics/material</b>		
Lifetime, typ.		
• Short-stroke keys (in switching cycles)	1500000	1500000
• LEDs (ON period)	100 %	100 %
<b>Dimensions and weight</b>		
Dimensions		
• Front of enclosure (W x H)	240 mm x 204 mm	240 mm x 204 mm
• Mounting cutout/device depth (W x H)	226 mm x 190 mm / 53 mm device depth	226 mm x 190 mm / 53 mm device depth
Weight		
• Weight	1.2 kg	1.5 kg

**Ordering data****Order No.**

<b>PP17-I</b>	A	<b>6AV3 688-3CD13-0AX0</b>
Push Button Panel incl. mounting accessories:		
• 16 x short-stroke keys		
• 16 x surface lighting diodes		
• 16 x DI terminals (24 V)		
• 16 x DO terminals (24 V)		
• 1 x enabling input		
• Max. 12 x 22.5 mm pre-perforated cutouts for additional components		
<b>PP17-II</b>	A	<b>6AV3 688-3ED13-0AX0</b>
Push Button Panel incl. mounting accessories:		
• 32 x short-stroke keys		
• 32 x surface lighting diodes		
• 16 x DI terminals (24 V)		
• 16 x DO terminals (24 V)		
• 1 x enabling input		
<b>Documentation</b>	To be ordered separately	
<b>Accessories for supplementary ordering</b>	see HMI accessories	

A: Subject to export regulations: AL: N and ECCN: EAR99H

Note:

Commercially available printing film (0.13 to 0.16 mm strength) can be used as labeling strips for the keyboard. Word templates are enclosed with the manual on a diskette.

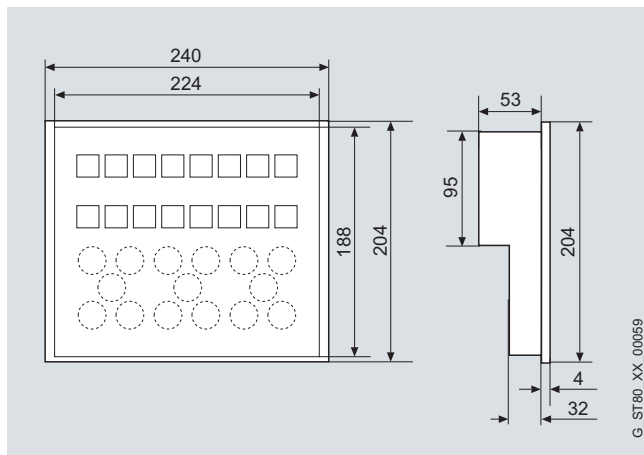
# Operator panels

## Key Panels

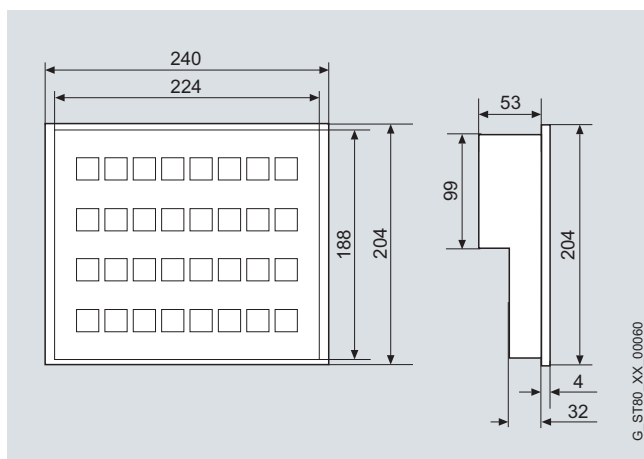
### SIMATIC PP17

#### Dimensional drawings

All specifications in mm. Panel cutout see technical specifications.



SIMATIC PP17-I



SIMATIC PP17-II

#### More information

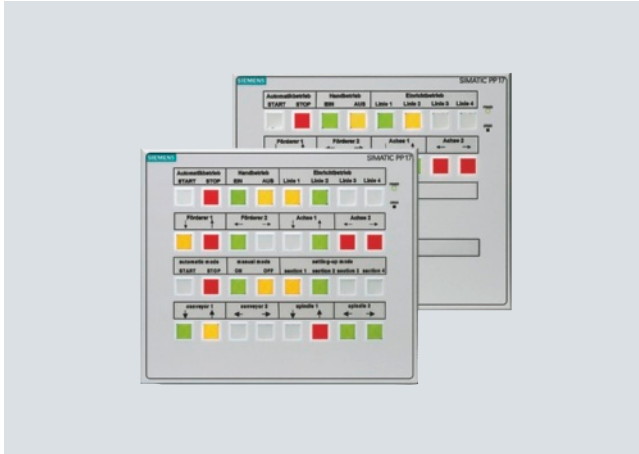
Additional information is available on the Internet at:

[www.siemens.com/simatic-pbp](http://www.siemens.com/simatic-pbp)

#### Note:

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## Overview



SIPLUS Push Button Panels are the innovative alternative to conventional control panels for easy, direct machine operation:

- Pre-assembled for operation;  
all keys and lights are immediately operational upon controller connection
- Connection to any controller via a bus cable (PROFIBUS DP "standard slave" or MPI)
- **PP17-I:**  
Equipped with short-stroke keys, additional digital inputs and outputs, and mounting points for 22.5 mm standard elements
- **PP17-II:**  
Equipped with short-stroke keys and additional digital inputs and outputs, etc.

Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Product type designation	SIPLUS HMI PP17	SIPLUS HMI PP17-II
<b>Order No.</b>	<b>6AG1 688-3CD13-4AX0</b>	<b>6AG1 688-3ED13-4AX0</b>
<b>Order No. based on</b>	<b>6AV3 688-3CD13-0AX0</b>	<b>6AV3 688-3ED13-0AX0</b>
Ambient temperature range	0 ... + 50 °C	
Conformal coating	Coating of the printed circuit boards and the electronic components	
Technical data	The technical data of the standard product applies except for the ambient conditions.	
<b>Ambient conditions</b>		
Relative humidity	5 ... 100 % Condensation permissible	
Biologically active substances	Conformity with EN 60721-3-3, Class 3B2 mold and fungal spores (except fauna)	
Chemically active substances	Conformity with EN 60721-3-3, Class 3C4 incl. salt mist and ISA-S71.04 severity level G1; G2; G3; GX <sup>1)2)</sup>	
Mechanically active substances	Conformity with EN 60721-3-3, Class 3S4 including conductive sand, dust <sup>2)</sup>	
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1000 ... +2000 m) see ambient temperature range 795 ... 658 hPa (+2000 ... +3500 m) derating 10 K 658 ... 540 hPa (+3500 ... +5000 m) derating 20 K	

1) ISA-S71.04 severity level GX: Long-term load:  $\text{SO}_2 < 4.8$  ppm;  $\text{H}_2\text{S} < 9.9$  ppm;  $\text{Cl} < 0.2$  ppm;  $\text{HCl} < 0.66$  ppm;  $\text{HF} < 0.12$  ppm;  $\text{NH} < 49$  ppm;  $\text{O}_3 < 0.1$  ppm;  $\text{NOX} < 5.2$  ppm  
Limit value (max. 30 min/d):  $\text{SO}_2 < 17.8$  ppm;  $\text{H}_2\text{S} < 49.7$  ppm;  $\text{Cl} < 1.0$  ppm;  $\text{HCl} < 3.3$  ppm;  $\text{HF} < 2.4$  ppm;  $\text{NH} < 247$  ppm;  $\text{O}_3 < 1.0$  ppm;  $\text{NOX} < 10.4$  ppm

2) The supplied plug covers must remain in place over the unused interface when operated in atmospheres containing corrosive gases!

The technical documentation on SIPLUS can be found here:

[www.siemens.com/siplus-extreme](http://www.siemens.com/siplus-extreme)

Ordering data	Order No.	Ordering data	Order No.
<b>SIPLUS HMI PP17-I</b> (medial exposure) <ul style="list-style-type: none"> <li>• 16 x short-stroke keys</li> <li>• 16 x surface LEDs</li> <li>• 16 x DI terminals (24 V)</li> <li>• 16 x DO terminals (24 V)</li> <li>• 1 x enabling input</li> <li>• max. 12 x 22.5 mm perforated panels for additional elements, including mounting hardware</li> </ul>	<b>6AV3 688-3CD13-4AX0</b>	<b>SIPLUS HMI PP17-II</b> (medial exposure) <ul style="list-style-type: none"> <li>• 32 x short-stroke keys</li> <li>• 32 x surface LEDs</li> <li>• 16 x DI terminals (24 V)</li> <li>• 16 x DO terminals (24 V)</li> <li>• 1 x enabling input</li> </ul> including mounting hardware <i>Accessories</i>	<b>6AV3 688-3ED13-0AX0</b>  see SIMATIC HMI PP17

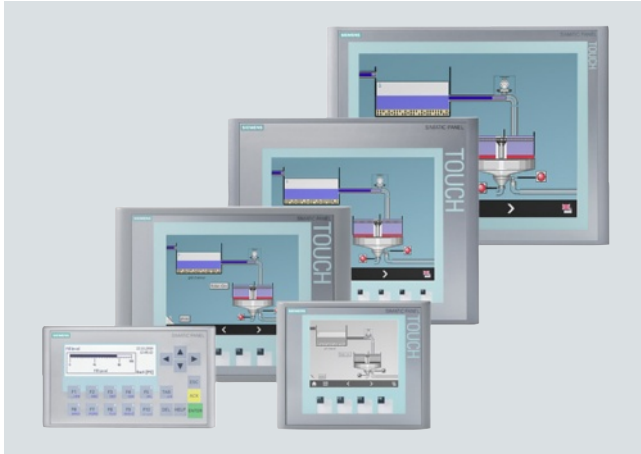
A: Subject to export regulations; AL: N and ECCN: EAR99H

# Operator panels

## Basic Panels

### Basic Panels – Standard

#### Overview



- Ideal entry-level series from 3" to 15" for operator control and monitoring compact machines and systems
- Clear process representation thanks to use of pixel-graphic displays
- Intuitive operation using Touch and tactile function keys
- Equipped with all the necessary basic functions such as alarm logging, recipe management, plots, vector graphics, and language switching
- Simple connection to the controller via integrated Ethernet interface or separate version with RS485/422

#### Benefits

- Integral component of Totally Integrated Automation (TIA): Increased productivity, minimum engineering overhead, reduction in life-cycle costs
  - Can be used even where installation space is restricted thanks to vertical configuring (4" and 6" devices)
  - Short configuring and commissioning times
  - Service-friendly thanks to maintenance-free design and long service life of the backlighting display
- Simple and user-friendly representation of process values thanks to, for example, input/output fields, vector graphics, trend curves, bar charts, text and bitmaps
- Graphic library available with off-the-shelf picture objects
- Can be used worldwide:
  - 32 languages can be configured (incl. Asian and Cyrillic character sets)
  - You can switch between up to 5 languages online
  - Language-dependent texts and graphics

#### Application

The SIMATIC HMI Basic Panels can be used wherever compact machines and plants are controlled and monitored locally - in production, process and building automation alike. They are used in the most diverse sectors and applications.

#### Design

The SIMATIC HMI Basic Panels are installation-compatible with the existing touch devices of the product family of Panels and Multi Panels.

##### *KP300 Basic mono PN*

- 3.6" FSTN black/white
- 1 Ethernet interface (TCP/IP, PROFINET)
- Touch device with 10 function keys and 10 system keys

##### *KTP400 Basic mono PN*

- 3.8" STN mono
- 1 Ethernet interface (TCP/IP, PROFINET)
- Touch screen and 4 tactile function keys

##### *KTP600 Basic mono PN*

- 5.7" STN mono
- 1 Ethernet interface (TCP/IP, PROFINET)
- Touch screen and 6 tactile function keys

##### *KTP600 Basic color PN or DP*

- 5.7" TFT with 256 colors
- 1 Ethernet interface (TCP/IP, PROFINET) or 1 RS 485/422 interface (MPI, PROFIBUS DP; separate version)
- Touch screen and 6 tactile function keys

##### *KTP1000 Basic color PN or DP*

- 10.4" TFT with 256 colors
- Ethernet interface (TCP/IP, PROFINET) or 1 RS 485/422 interface (MPI, PROFIBUS DP; separate version)
- Touch screen and 8 tactile function keys

##### *TP1500 Basic color PN*

- 15.0" TFT with 256 colors
- 1 Ethernet interface (TCP/IP, PROFINET) touch screen

### Function

- Input/output fields  
for displaying and modifying process parameters
- Buttons  
are used for direct triggering of functions and actions. Up to 16 functions can be configured simultaneously on buttons.
- Graphics  
can be used as icons instead of text to "label" function keys or buttons. They can also be used as full-screen background images.  
The configuration tool contains a library with extensive graphics and diverse objects. All editors with an OLE interface (such as PaintShop, Designer or CorelDraw) can be used as graphic editors
- Vector graphics  
Simple geometric basic forms (line, circle and rectangle) can be created direct in the configuring tool
- Fixed texts  
for labeling function keys, process images and process values in different font sizes
- Curve functions and bars  
are used for graphical display of dynamic values
- Language switching:
  - 5 online languages, 32 configuration languages incl. Asian and Cyrillic character sets
  - Language-dependent texts and graphics
- User administration (security) in accordance with the requirements of the different sectors
  - Authentication with user ID and password
  - User-group-specific rights
- Signaling system
  - Discrete alarms
  - Analog alarms
  - Freely definable message classes (e.g. status/fault messages) for defining acknowledgment response and displaying alarm events
  - Message history
- Recipe management
- Help texts  
for process screens, messages and variables
- Arithmetic functions
- Limit value monitoring  
for reliable process control of inputs and outputs
- Indicator light  
for indicating machine and plant statuses
- Scheduler for global function execution in case of global events
- Template concept for creation of screen templates (screen elements configured in the template appear in every screen)
- Simple maintenance and configuration thanks to:
  - Backup/restore of configuration, operating system and firmware on/from a PC using ProSave
  - Configuration download via MPI/PROFIBUS DP or PROFINET
  - Automatic transfer identification
  - Individual contrast or brightness setting (except 6" color) and calibration
  - Clean screen
  - No battery required

### Configuration

The configuration is implemented using the engineering software SIMATIC WinCC Basic, Comfort, Professional or SIMATIC STEP 7 Basic (with integrated WinCC Basic).

The 4" to 15" devices can also be configured using the SIMATIC WinCC flexible Compact, Standard or Advanced engineering software.

### Integration

The Basic Panels can be connected to:

- SIMATIC S7 controllers
- Non-Siemens controllers (applies for DP devices)
  - Allen Bradley DF1
  - Modicon Modbus RTU
  - Mitsubishi FX
  - Omron Hostlink/Multilink
- Non-Siemens controllers (non-Siemens drivers for PN devices)
  - Allen Bradley Ethernet/IP
  - Modicon Modbus TCP/IP
  - Mitsubishi MC TCP/IP

### Note:

For further information, see "System interfaces".

# Operator panels

## Basic Panels

### Basic Panels – Standard

#### Technical specifications

Product type designation	6AV6 647-0AH11-3AX0 SIMATIC HMI KP300 Basic mono PN	6AV6 647-0AA11-3AX0 SIMATIC HMI KTP400 Basic mono PN	6AV6 647-0AB11-3AX0 SIMATIC HMI KTP600 Basic mono PN	6AV6 647-0AC11-3AX0 SIMATIC HMI KTP600 Basic color DP	6AV6 647-0AD11-3AX0 SIMATIC HMI KTP600 Basic color PN
<b>Display</b>					
Size		3.8" (76.8 mm x 57.6 mm)	5.7" (115.2 mm x 86.4 mm)	5.7" (115.2 mm x 86.4 mm)	5.7" (115.2 mm x 86.4 mm)
Display type		STN, gray scales	STN, gray scales	TFT, 256 colors	TFT, 256 colors
Resolution (pixels) • Resolution (WxH in pixel)		320 x 240	320 x 240	320 x 240	320 x 240
Backlighting • MTBF backlighting (at 25 °C)		Approx. 30000 hours	about 50,000 hours	about 50,000 hours	about 50,000 hours
<b>Control elements</b>					
Control elements	Membrane keyboard	Membrane keyboard	Membrane keyboard	Membrane keyboard	Membrane keyboard
Function keys, programmable		4 function keys	6 function keys	6 function keys	6 function keys
Connection for mouse/keyboard/barcode reader	- / - / -	- / - / -	- / - / -	- / - / -	- / - / -
Keyboard • System keys • Numeric/alphabetical input	10	Yes (on-screen keyboard) / Yes (on-screen keyboard)	Yes (on-screen keyboard) / Yes (on-screen keyboard)	Yes (on-screen keyboard) / Yes (on-screen keyboard)	Yes (on-screen keyboard) / Yes (on-screen keyboard)
Touch operation • Touch screen	No	analog, resistive	analog, resistive	analog, resistive	analog, resistive
<b>Supply voltage</b>					
Input voltage • permissible range • Supply voltage	+19.2 V to +28.8 V DC 24 V DC	+19.2 V to +28.8 V DC 24 V DC	+19.2 V to +28.8 V DC 24 V DC	+19.2 V to +28.8 V DC 24 V DC	+19.2 V to +28.8 V DC 24 V DC
<b>Input current</b>					
Rated current	0.1 A	0.07 A	0.24 A	0.35 A	0.35 A
<b>Memory</b>					
Type	Flash / RAM	Flash / RAM	Flash / RAM	Flash / RAM	Flash / RAM
Usable memory for user data		512 KB usable memory for user data	512 KB usable memory for user data	512 KB usable memory for user data	512 KB usable memory for user data
<b>Type of output</b>					
Acoustics		Sound signal	Sound signal	Sound signal	Sound signal
<b>Time of day</b>					
Clock • Type	Software clock, no battery backup	Software clock, no battery backup	Software clock, no battery backup	Software clock, no battery backup	Software clock, no battery backup
<b>Interfaces</b>					
Interfaces	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)	1 x RS422, 1 x RS485 (max. 12 Mbit/s)	1 x Ethernet (RJ45)
USB port	No	No	No	No	No
PC card slot	No	No	No	No	No
CF card slot	No	No	No	No	No
Multi Media Card slot	No	No	No	No	No
Industrial Ethernet • Industrial Ethernet interface	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)	No	1 x Ethernet (RJ45)

## Technical specifications (continued)

Product type designation	6AV6 647-0AH11-3AX0 SIMATIC HMI KP300 Basic mono PN	6AV6 647-0AA11-3AX0 SIMATIC HMI KTP400 Basic mono PN	6AV6 647-0AB11-3AX0 SIMATIC HMI KTP600 Basic mono PN	6AV6 647-0AC11-3AX0 SIMATIC HMI KTP600 Basic color DP	6AV6 647-0AD11-3AX0 SIMATIC HMI KTP600 Basic color PN
<b>Protocols</b>					
Protocols (terminal link) • Sm@rtAccess	No	No	No	No	No
<b>Ambient conditions</b>					
Operating temperature					
• Operation (vertical installation)	0 °C to +50 °C	0 °C to +50 °C	0 °C to +50 °C	0 °C to +50 °C	0 °C to +50 °C
• Operation (max. tilt angle)	0 °C to +40 °C	0 °C to +40 °C	0 °C to +40 °C	0 °C to +40 °C	0 °C to +40 °C
Storage/transport temperature					
• Transport, storage	-20 °C to +60 °C	-20 °C to +60 °C	-20 °C to +60 °C	-20 °C to +60 °C	-20 °C to +60 °C
Relative humidity					
• max. relative humidity	90 %	90 %	90 %	90 %	90 %
Mounting position	vertical	vertical	vertical	vertical	vertical
maximum permissible angle of inclination without external ventilation	+/- 35 °	+/- 35 °	+/- 35 °	+/- 35 °	+/- 35 °
<b>Degree and class of protection</b>					
Front	IP65, NEMA 4, NEMA 4x, NEMA 12 (when installed)	IP65, NEMA 4, NEMA 4x, NEMA 12 (when installed)	IP65, NEMA 4, NEMA 4x, NEMA 12 (when installed)	IP65, NEMA 4, NEMA 4x, NEMA 12 (when installed)	IP65, NEMA 4, NEMA 4x, NEMA 12 (when installed)
Rear	IP20	IP20	IP20	IP20	IP20
<b>Configuration</b>					
Configuration software					
• Configuration tool	see "Configuration overview" from page 2/3				
<b>Functionality under WinCC flexible/WinCC (TIA portal)</b>					
Applications/options	see chapter 4: HMI software/SIMATIC WinCC flexible options and SIMATIC WinCC (TIA portal) options				
Number of Visual Basic Scripts	Not possible	Not possible	Not possible	Not possible	Not possible
Task planner	Yes	Yes	Yes	Yes	Yes
Help system	Yes	Yes	Yes	Yes	Yes
Status/control	Not possible	Not possible	Not possible	Not possible	Not possible
With alarm logging system (incl. buffer and acknowledgment)					
• Number of messages	200	200	200	200	200
• Bit messages	Yes	Yes	Yes	Yes	Yes
• Analog messages	Yes	Yes	Yes	Yes	Yes
• Message buffer	Ring buffer (n x 256 entries), retentive, maintenance-free	Ring buffer (n x 256 entries), retentive, maintenance-free	Ring buffer (n x 256 entries), retentive, maintenance-free	Ring buffer (n x 256 entries), retentive, maintenance-free	Ring buffer (n x 256 entries), retentive, maintenance-free

# Operator panels

## Basic Panels

### Basic Panels – Standard

#### Technical specifications (continued)

Product type designation	6AV6 647-0AH11-3AX0 SIMATIC HMI KP300 Basic mono PN	6AV6 647-0AA11-3AX0 SIMATIC HMI KTP400 Basic mono PN	6AV6 647-0AB11-3AX0 SIMATIC HMI KTP600 Basic mono PN	6AV6 647-0AC11-3AX0 SIMATIC HMI KTP600 Basic color DP	6AV6 647-0AD11-3AX0 SIMATIC HMI KTP600 Basic color PN
Recipes					
• Recipes	5	5	5	5	5
• Data records per recipe	20	20	20	20	20
• Entries per data record	20	20	20	20	20
• Recipe memory	40 KB integrated Flash	40 KB integrated Flash	40 KB integrated Flash	40 KB integrated Flash	40 KB integrated Flash
Number of process images					
• Process images	50	50	50	50	50
• Variables	250	250	500	500	500
• Limit values	Yes	Yes	Yes	Yes	Yes
• Multiplexing	Yes	Yes	Yes	Yes	Yes
Image elements					
• Text objects	500 text elements	500 text elements	500 text elements	500 text elements	500 text elements
• Graphic object	Bit maps, icons, icon (full-screen), vector graphics	Bit maps, icons, icon (full-screen), vector graphics	Bit maps, icons, icon (full-screen), vector graphics	Bit maps, icons, icon (full-screen), vector graphics	Bit maps, icons, icon (full-screen), vector graphics
• dynamic objects	Diagrams, bar graphs	Diagrams, bar graphs	Diagrams, bar graphs	Diagrams, bar graphs	Diagrams, bar graphs
Lists					
• Text lists	150	150	150	150	150
• Graphic list	100	100	100	100	100
• Libraries	Yes	Yes	Yes	Yes	Yes
Security					
• Number of user groups	50	50	50	50	50
• Passwords exportable	No	No	No	No	No
• Number of user rights	32	32	32	32	32
Data carrier support					
• PC card	No	No	No	No	No
• CF card	No	No	No	No	No
• Multimedia Card	No	No	No	No	No
Recording					
• Recording/Printing	-	-	-	-	-
Fonts					
• Keyboard fonts	US American (English)	US American (English)	US American (English)	US American (English)	US American (English)
Languages					
• Configuration languages	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H
• Character sets	Tahoma, WinCC flexible Standard, symbol languages	Tahoma, WinCC flexible Standard, symbol languages	Tahoma, WinCC flexible Standard, symbol languages	Tahoma, WinCC flexible Standard, symbol languages	Tahoma, WinCC flexible Standard, symbol languages



## Technical specifications (continued)

Product type designation	6AV6 647-0AH11-3AX0 SIMATIC HMI KP300 Basic mono PN	6AV6 647-0AA11-3AX0 SIMATIC HMI KTP400 Basic mono PN	6AV6 647-0AB11-3AX0 SIMATIC HMI KTP600 Basic mono PN	6AV6 647-0AC11-3AX0 SIMATIC HMI KTP600 Basic color DP	6AV6 647-0AD11-3AX0 SIMATIC HMI KTP600 Basic color PN
Transfer (upload/download) • Transfer of configuration	Ethernet, automatic transfer recognition	Ethernet, automatic transfer recognition	Ethernet, automatic transfer recognition	MPI/PROFIBUS DP, serial, automatic transfer recognition	Ethernet, automatic transfer recognition
Process coupling • Connection to controller	see "System interfaces" from page 2/178				
Expandability/openness • Open Platform Program	No	No	No	No	No
I/O I/O devices	None	None	None	None	None
Dimensions and weight Dimensions • Front of enclosure (W x H) • Mounting cutout/device depth (W x H)		140 mm x 116 mm 123 mm x 99 mm/ 40 mm device depth	214 mm x 158 mm 197 mm x 141 mm/ 44 mm device depth	214 mm x 158 mm 197 mm x 141 mm/ 44 mm device depth	214 mm x 158 mm 197 mm x 141 mm/ 44 mm device depth
Weight • Weight	0.25 kg		1.07 kg	1.07 kg	1.07 kg

Product type designation	6AV6 647-0AE11-3AX0 SIMATIC HMI KTP1000 Basic color DP	6AV6 647-0AF11-3AX0 SIMATIC HMI KTP1000 Basic color PN	6AV6 647-0AG11-3AX0 SIMATIC HMI TP1500 Basic color PN
Display Size	10.4" (211.2 mm x 158.4 mm)	10.4" (211.2 mm x 158.4 mm)	15" (304.1 mm x 228.1 mm)
Display type	TFT, 256 colors	TFT, 256 colors	TFT, 256 colors
Resolution (pixels) • Resolution (WxH in pixel)	640 x 480	640 x 480	1024 x 768
Backlighting • MTBF backlighting (at 25 °C)	about 50,000 hours	about 50,000 hours	about 50,000 hours
Control elements Control elements	Membrane keyboard	Membrane keyboard	Touch screen
Function keys, programmable	8 function keys	8 function keys	None
Connection for mouse/keyboard/barcode reader	- / - / -	- / - / -	- / - / -
Keyboard • Numeric/alphabetical input	Yes (on-screen keyboard) / Yes (on-screen keyboard)	Yes (on-screen keyboard) / Yes (on-screen keyboard)	Yes (on-screen keyboard) / Yes (on-screen keyboard)
Touch operation • Touch screen	analog, resistive	analog, resistive	analog, resistive
Supply voltage Input voltage • permissible range • Supply voltage	+19.2 V to +28.8 V DC 24 V DC	+19.2 V to +28.8 V DC 24 V DC	+19.2 V to +28.8 V DC 24 V DC
Input current Rated current	0.6 A	0.6 A	0.8 A

# Operator panels

## Basic Panels

### Basic Panels – Standard

#### Technical specifications (continued)

Product type designation	6AV6 647-0AE11-3AX0 SIMATIC HMI KTP1000 Basic color DP	6AV6 647-0AF11-3AX0 SIMATIC HMI KTP1000 Basic color PN	6AV6 647-0AG11-3AX0 SIMATIC HMI TP1500 Basic color PN
<b>Memory</b>			
Type	Flash / RAM	Flash / RAM	Flash / RAM
Usable memory for user data	1024 KB usable memory for user data	1024 KB usable memory for user data	1024 KB usable memory for user data
<b>Type of output</b>			
Acoustics	Sound signal	Sound signal	Sound signal
<b>Time of day</b>			
Clock			
• Type	Software clock, no battery backup	Software clock, no battery backup	Software clock, no battery backup
<b>Interfaces</b>			
Interfaces	1 x RS422, 1 x RS485 (max. 12 Mbit/s)	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)
USB port	No	No	No
PC card slot	No	No	No
CF card slot	No	No	No
Multi Media Card slot	No	No	No
Industrial Ethernet			
• Industrial Ethernet interface	No	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)
<b>Protocols</b>			
Protocols (terminal link)			
• Sm@rtAccess	No	No	No
<b>Ambient conditions</b>			
Operating temperature			
• Operation (vertical installation)	0 °C to +50 °C	0 °C to +50 °C	0 °C to +50 °C
• Operation (max. tilt angle)	0 °C to +40 °C	0 °C to +40 °C	0 °C to +40 °C
Storage/transport temperature			
• Transport, storage	-20 °C to +60 °C	-20 °C to +60 °C	-20 °C to +60 °C
Relative humidity			
• max. relative humidity	90 %	90 %	90 %
Mounting position	vertical	vertical	vertical
maximum permissible angle of inclination without external ventilation	+/- 35 °	+/- 35 °	+/- 35 °
<b>Degree and class of protection</b>			
Front	IP65, NEMA 4, NEMA 4x, NEMA 12 (when installed)	IP65, NEMA 4, NEMA 4x, NEMA 12 (when installed)	IP65, NEMA 4, NEMA 4x, NEMA 12 (when installed)
Rear	IP20	IP20	IP20
<b>Configuration</b>			
Configuration software	see "Configuration overview" from page 2/3		
• Configuration tool			

**Technical specifications** (continued)

Product type designation	6AV6 647-0AE11-3AX0 SIMATIC HMI KTP1000 Basic color DP	6AV6 647-0AF11-3AX0 SIMATIC HMI KTP1000 Basic color PN	6AV6 647-0AG11-3AX0 SIMATIC HMI TP1500 Basic color PN
<b>Functionality under WinCC flexible/WinCC (TIA Portal)</b>			
Applications/options	see chapter 4: HMI software/SIMATIC WinCC flexible options and SIMATIC WinCC (TIA portal) option		
Number of Visual Basic Scripts	Not possible	Not possible	Not possible
Task planner	Yes	Yes	Yes
Help system	Yes	Yes	Yes
Status/control	Not possible	Not possible	Not possible
With alarm logging system (incl. buffer and acknowledgment)			
• Number of messages	200	200	200
• Bit messages	Yes	Yes	Yes
• Analog messages	Yes	Yes	Yes
• Message buffer	Ring buffer (n x 256 entries), retentive, maintenance-free	Ring buffer (n x 256 entries), retentive, maintenance-free	Ring buffer (n x 256 entries), retentive, maintenance-free
Recipes			
• Recipes	5	5	5
• Data records per recipe	20	20	20
• Entries per data record	20	20	20
• Recipe memory	40 KB integrated Flash	40 KB integrated Flash	40 KB integrated Flash
Number of process images			
• Process images	50	50	50
• Variables	500	500	500
• Limit values	Yes	Yes	Yes
• Multiplexing	Yes	Yes	Yes
Image elements			
• Text objects	500 text elements	500 text elements	500 text elements
• Graphic object	Bit maps, icons, icon (full-screen), vector graphics	Bit maps, icons, icon (full-screen), vector graphics	Bit maps, icons, icon (full-screen), vector graphics
• dynamic objects	Diagrams, bar graphs	Diagrams, bar graphs	Diagrams, bar graphs
Lists			
• Text lists	150	150	150
• Graphic list	100	100	100
• Libraries	Yes	Yes	Yes
Security			
• Number of user groups	50	50	50
• Passwords exportable	No	No	No
• Number of user rights	32	32	32
Data carrier support			
• PC card	No	No	No
• CF card	No	No	No
• Multimedia Card	No	No	No
Recording			
• Recording/Printing	-	-	-
Fonts			
• Keyboard fonts	US American (English)	US American (English)	US American (English)

# Operator panels

## Basic Panels

### Basic Panels – Standard

#### Technical specifications (continued)

Product type designation	6AV6 647-0AE11-3AX0 SIMATIC HMI KTP1000 Basic color DP	6AV6 647-0AF11-3AX0 SIMATIC HMI KTP1000 Basic color PN	6AV6 647-0AG11-3AX0 SIMATIC HMI TP1500 Basic color PN
Languages <ul style="list-style-type: none"> <li>• Configuration languages</li> <li>• Character sets</li> </ul>	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H Tahoma, WinCC flexible Standard, symbol languages	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H Tahoma, WinCC flexible Standard, symbol languages	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H Tahoma, WinCC flexible Standard, symbol languages
Transfer (upload/download) <ul style="list-style-type: none"> <li>• Transfer of configuration</li> </ul>	MPI/PROFIBUS DP, serial, automatic transfer recognition	Ethernet, automatic transfer recog- nition	Ethernet, automatic transfer recog- nition
Process coupling <ul style="list-style-type: none"> <li>• Connection to controller</li> </ul>	see "System interfaces" from page 2/178		
Expandability/openness <ul style="list-style-type: none"> <li>• Open Platform Program</li> </ul>	No	No	No
<b>I/O</b> I/O devices	None	None	None
<b>Dimensions and weight</b> Dimensions <ul style="list-style-type: none"> <li>• Front of enclosure (W x H)</li> <li>• Mounting cutout/device depth (W x H)</li> </ul>	335 mm x 275 mm 310 mm x 248 mm / 60 mm device depth	335 mm x 275 mm 310 mm x 248 mm / 60 mm device depth	400 mm x 310 mm 367 mm x 289 mm / 60 mm device depth
Weight <ul style="list-style-type: none"> <li>• Weight</li> </ul>	2.65 kg	2.65 kg	4.2 kg

Ordering data	Order No.	Order No.
<b>SIMATIC HMI KP300 Basic mono PN</b>	A <b>6AV6 647-0AH11-3AX0</b>	<b>Configuration</b> All device versions: SIMATIC WinCC Basic/Comfort/Professional or SIMATIC STEP 7 Basic (with integrated WinCC Basic)
<b>SIMATIC HMI KTP400 Basic mono PN</b>	A <b>6AV6 647-0AA11-3AX0</b>	
<b>SIMATIC HMI KTP600 Basic mono PN</b>	A <b>6AV6 647-0AB11-3AX0</b>	4"-15" device versions: SIMATIC WinCC flexible Compact
<b>SIMATIC HMI KTP600 Basic color DP</b>	A <b>6AV6 647-0AC11-3AX0</b>	
<b>SIMATIC HMI KTP600 Basic color PN</b>	A <b>6AV6 647-0AD11-3AX0</b>	<b>Documentation (to be ordered separately)</b> You can find the manual for the Basic Panels on the Internet at:
<b>SIMATIC HMI KTP1000 Basic color DP</b>	A <b>6AV6 647-0AE11-3AX0</b>	
<b>SIMATIC HMI KTP1000 Basic color PN</b>	A <b>6AV6 647-0AF11-3AX0</b>	<b>SIMATIC HMI Manual Collection B</b> <b>6AV6 691-1SA01-0AX0</b> <b>Electronic documentation, on DVD</b> 5 languages (English, French, German, Italian and Spanish); contains: all currently available user manuals, manuals and communication manuals for SIMATIC HMI
<b>SIMATIC HMI TP1500 Basic color PN</b>	A <b>6AV6 647-0AG11-3AX0</b>	
<b>Starter kit SIMATIC S7-1200 + KP300 Basic mono PN</b>	A <b>6AV6 651-7HA01-3AA1</b>	
<b>Starter kit SIMATIC S7-1200 + KTP400 Basic mono PN</b>	A <b>6AV6 651-7AA01-3AA1</b>	
<b>Starter kit SIMATIC S7-1200 + KTP600 Basic color PN</b>	A <b>6AV6 651-7DA01-3AA1</b>	
<b>Starter kits consist of:</b> <ul style="list-style-type: none"> <li>the respective SIMATIC HMI Basic Panel               <ul style="list-style-type: none"> <li>SIMATIC HMI KP300 Basic mono PN</li> <li>SIMATIC HMI KTP400 Basic mono PN</li> <li>SIMATIC HMI KTP600 Basic color PN</li> </ul> </li> <li>SIMATIC S7-1200 CPU 1212C AC/DC/Rly</li> <li>SIMATIC S7-1200 Simulator Module SIM 1274</li> <li>SIMATIC STEP 7 BASIC CD</li> <li>SIMATIC S7-1200 HMI Manual Collection CD</li> <li>Ethernet CAT5 cable, 2 m</li> </ul>		

A: Subject to export regulations: AL: N and ECCN: EAR99H

B: Subject to export regulations: AL: N and ECCN: EAR99S

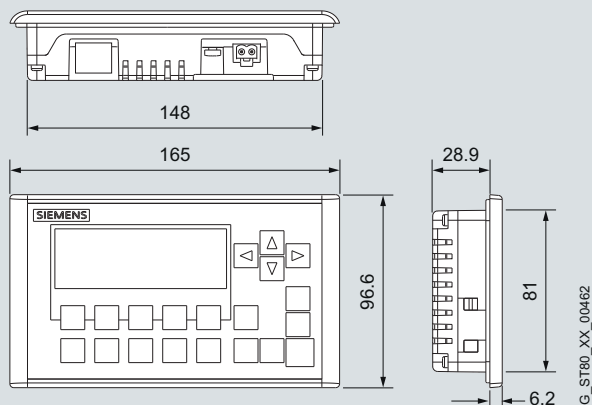
# Operator panels

## Basic Panels

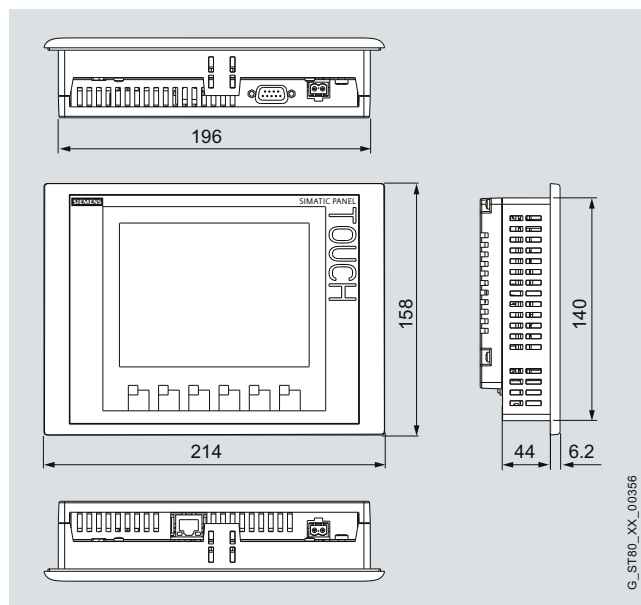
### Basic Panels – Standard

#### Dimensional drawings

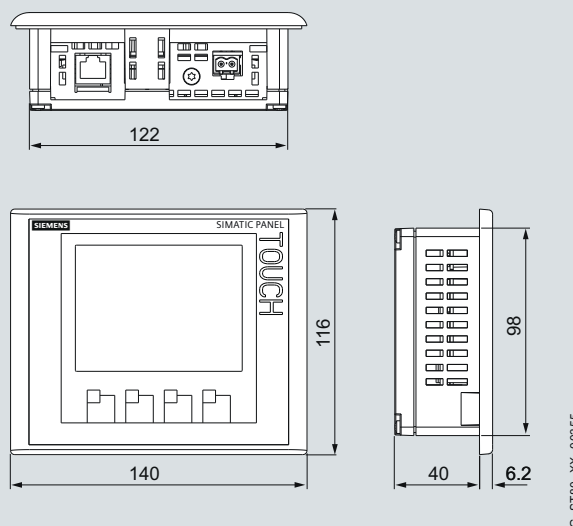
All specifications in mm. Panel cutout see technical specifications.



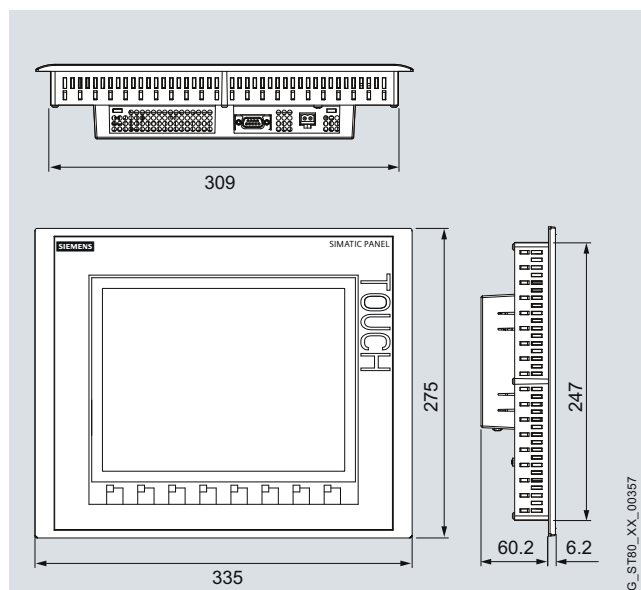
KP300 Basic



KTP600 Basic



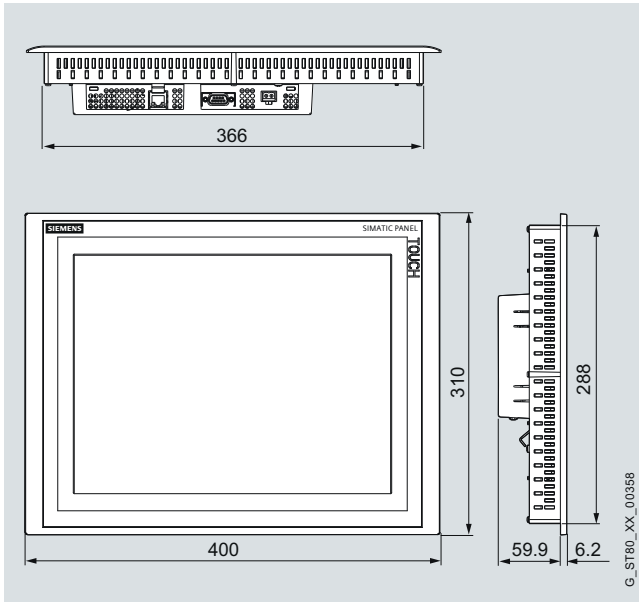
KTP400 Basic



KTP1000 Basic

### Dimensional drawings (continued)

All specifications in mm. Panel cutout see technical specifications.



TP1500 Basic

### More information

Additional information is available on the Internet at:

[www.siemens.com/simatic-basic-panels](http://www.siemens.com/simatic-basic-panels)

### Note:

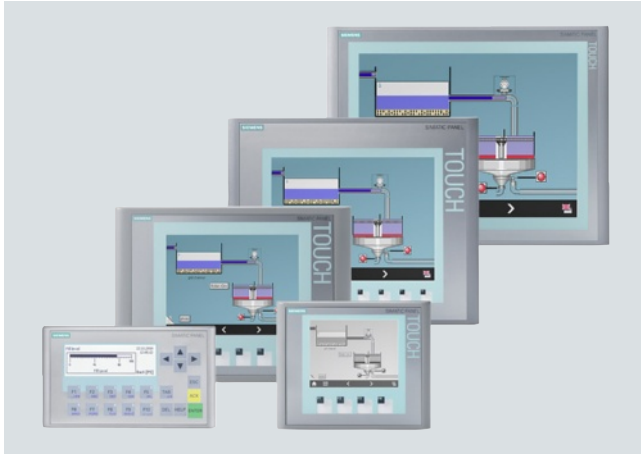
Do you require a specific modification or extension to the products described here? Under "Customized products", you can find information about additional and generally available products for the sector, and about the possibilities for customized modification and adaptation.

# Operator panels

## SIPLUS Basic Panels

### SIPLUS Basic Panels

#### Overview



- Ideal entry-level series of 3.8 inches to 15 inches for operating and monitoring compact machines and systems
- Clear process representation through the use of full-graphic displays
- Intuitive operation via touch and tactile function keys
- Equipped with all the necessary basic functions such as reporting, recipe management, curve representation, vector graphics, and language selection
- Easy connection to the controller via integrated Ethernet interface or a separate version with RS485/422

#### Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

	SIPLUS HMI KTP400 Basic mono PN	SIPLUS HMI KTP600 Basic color PN	SIPLUS HMI KTP1000 Basic color DP	SIPLUS HMI KTP1000 Basic color PN	SIPLUS HMI TP1500 Basic color PN
Order No.	6AG1647-0AA11-2AX0	6AG1647-0AD11-2AX0	6AG1647-0AE11-4AX0	6AG1647-0AF11-4AX0	6AG1647-0AG11-4AX0
Order No. based on	6AV6647-0AA11-3AX0	6AV6647-0AD11-3AX0	6AV6647-0AE11-3AX0	6AV6647-0AF11-3AX0	6AV6647-0AG11-3AX0
Ambient temperature range	-10 ... +60 °C	-25 ... +60 °C	0 ... +50 °C	0 ... +50 °C	0 ... +50 °C
Conformal coating	Coating of the printed circuit boards and the electronic components				
Technical data	The technical data of the standard product applies except for the ambient conditions.				
Ambient conditions					
Relative humidity	5 ... 100 % Condensation permissible				
Biologically active substances	Conformity with EN 60721-3-3, Class 3B2 mold and fungal spores (except fauna)				
Chemically active substances	Conformity with EN 60721-3-3, Class 3C4 incl. salt mist and ISA–S71.04 severity level G1; G2; G3; GX <sup>1) 2)</sup>				
Mechanically active substances	Conformity with EN 60721-3-3, Class 3S4 including conductive sand, dust <sup>2)</sup>				
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1000 ... +2000 m) see ambient temperature range 795 ... 658 hPa (+2000 ... +3500 m) derating 10 K 658 ... 540 hPa (+3500 ... +5000 m) derating 20 K				

<sup>1)</sup> ISA-S71.04 severity level GX: Long-term load: SO<sub>2</sub> < 4.8 ppm; H<sub>2</sub>S < 9.9 ppm; Cl < 0.2 ppm; HCl < 0.66 ppm; HF < 0.12 ppm; NH<sub>3</sub> < 49 ppm; O<sub>3</sub> < 0.1 ppm; NO<sub>x</sub> < 5.2 ppm  
Limit value (max. 30 min/d): SO<sub>2</sub> < 17.8 ppm; H<sub>2</sub>S < 49.7 ppm; Cl < 1.0 ppm; HCl < 3.3 ppm; HF < 2.4 ppm; NH<sub>3</sub> < 247 ppm; O<sub>3</sub> < 1.0 ppm; NO<sub>x</sub> < 10.4 ppm

<sup>2)</sup> The supplied plug covers must remain in place over the unused interface when operated in atmospheres containing corrosive gases!

The technical documentation on SIPLUS can be found here:

[www.siemens.com/siplus-extreme](http://www.siemens.com/siplus-extreme)



Ordering data		Order No.			Order No.
<b>SIPLUS HMI KTP400 Basic mono PN</b>	A	<b>6AG1 647-0AA11-2AX0</b>	<b>SIPLUS HMI KTP 1000 Basic Color PN</b>	A	<b>6AG1 647-0AF11-4AX0</b>
Extended ambient temperature range -10 ... + 60 °C. Suitable for areas with extraordinary medial exposure (conformal coating); ambient temperature -10 ... +60 °C			Suitable for areas with extraordinary medial exposure (conformal coating); ambient temperature 0 ... +50 °C		
<b>SIPLUS HMI KTP 600 Basic color PN</b>	A	<b>6AG1 647-0AD11-2AX0</b>	<b>SIPLUS HMI TP 1500 Basic Color PN</b>	A	<b>6AG1 647-0AG11-4AX0</b>
Extended ambient temperature range -25 ... + 60 °C. Suitable for areas with extraordinary medial exposure (conformal coating); ambient temperature -25 ... +60 °C			Suitable for areas with extraordinary medial exposure (conformal coating); ambient temperature 0 ... +50 °C		
<b>SIPLUS HMI KTP 1000 Basic Color DP</b>	A	<b>6AG1 647-0AE11-4AX0</b>	<b>Accessories</b>		see SIMATIC Basic Panels
Suitable for areas with extraordinary medial exposure (conformal coating); ambient temperature 0 ... +50 °C					

A: Subject to export regulations: AL: N and ECCN: EAR99H

A: Subject to export regulations: AL: N and ECCN: EAR99H

# Operator panels

## Comfort Panels

### Comfort Panels – Standard

#### Overview



- Excellent HMI functionality for demanding applications
- Widescreen TFT displays with 4.3", 7.0", 9.0" and 12.1" diagonals (all 16 million colors) with up to 40% more visualization area as compared to the predecessor devices
- Integrated high-end functionality with archives, scripts, PDF/Word/Excel viewer, Internet Explorer, Media Player
- Dimmable displays from 0 to 100% via PROFlenergy, via the HMI project or via a controller
- Up-to-date industrial design
- Upright installation for all touch devices
- Optimal selection option: four Touch and four Key versions are available
- Data security in the event of a power failure for the device and for the SIMATIC HMI Memory Card
- Innovative service and commissioning concept through second SD card (automatic backup)
- Easy project transfer via standard cable (standard Ethernet cable, standard USB cable)
- Maximum performance with short screen refresh times
- Suitable for harsh industrial environments thanks to extended approvals, such as Ex 2/22 and marine approval, cast aluminum fronts for 7" upwards
- Wide range of communication options: PROFIBUS and PROFINET onboard, with 7" and above, 2 x PROFINET with integrated switch
- Key-operated devices with LED in every function key and new text input mechanism, similar to the keypads of mobile phones
- Key-operated devices with stamped keys for optimum tactile feedback
- All keys have a service life of 2 million operations
- Configuring with the WinCC engineering software of the TIA Portal

#### Benefits

- Integral component of Totally Integrated Automation (TIA): Increased productivity, minimum engineering overhead, reduction in life-cycle costs
  - Can also be used in a vertical position where installation space is restricted (all touch devices)
- Reduction of service and commissioning costs due to:
  - Short configuring and commissioning times through efficient engineering and fast project downloading
  - Automatic backup via optional SIMATIC HMI memory card
  - Long service life of the backlighting
  - Maintenance-free design
  - Data security in the event of power failure
- Simple and user-friendly representation of process values thanks to, for example, input/output fields, graphics, trend curves, bar charts, text and bitmaps
- Graphic library is available with preconfigured screen objects
- Can be used worldwide:
  - 32 online languages (incl. Asian and Cyrillic character sets) can be configured
  - Up to 32 languages can be switched online
  - Language-dependent texts and graphics
- Standard hardware and software interfaces for increasing flexibility and for saving on additional hardware:
  - PROFIBUS and PROFINET onboard (with 7" and above, two PROFINET ports with integrated switch)
  - Two SD card slots for storing archives, user data and for automatic backup
  - USB device interface for easy downloading of projects
  - USB host interfaces for connecting USB flash drive, keyboard, mouse and printer
  - With 7" and above, audio in/out interface for use with the integrated media player
  - Standard Windows storage formats (CSV) for archives and recipes permit further processing with standard tools (e.g. Microsoft Excel)
  - Modular expansion capability with the Sm@rtServer option for communication between various SIMATIC HMI systems and for remote maintenance

#### Application

The SIMATIC HMI Comfort Panels can be used wherever machines and plants are controlled and monitored locally - in production, process and building automation alike. They may be used in all kinds of industries and applications. They are ideally suited to demanding visualization tasks, and due to the integrated functionality, the right device can be selected for every application.

### Design

#### KTP400 Comfort

- 4.3" widescreen TFT display, resolution 480 x 272, 16 million colors
- 1 PROFINET and 1 PROFIBUS interface
- Touch screen and membrane keyboard with 4 tactile function keys

#### KP400 Comfort

- 4.3" widescreen TFT display, resolution 480 x 272, 16 million colors
- 1 PROFINET and 1 PROFIBUS interface
- Membrane keyboard with 8 tactile function keys and system keyboard

#### TP700 Comfort

- 7.0" widescreen TFT display, resolution 800 x 480, 16 million colors
- 1 PROFINET (2 ports with integrated switch) and 1 PROFIBUS interface
- Touch screen

#### KP700 Comfort

- 7.0" widescreen TFT display, resolution 800 x 480, 16 million colors
- 1 PROFINET (2 ports with integrated switch) and 1 PROFIBUS interface
- Membrane keyboard with 24 function keys and system keyboard

#### TP900 Comfort

- 9.0" widescreen TFT display, resolution 800 x 480, 16 million colors
- 1 PROFINET (2 ports with integrated switch) and 1 PROFIBUS interface
- Touch screen

#### KP900 Comfort

- 9.0" widescreen TFT display, resolution 800 x 480, 16 million colors
- 1 PROFINET (2 ports with integrated switch) and 1 PROFIBUS interface
- Membrane keyboard with 26 function keys and system keyboard

#### TP1200 Comfort

- 12.1" widescreen TFT display, resolution 1280 x 800, 16 million colors
- 1 PROFINET (2 ports with integrated switch) and 1 PROFIBUS interface
- Touch screen

#### KP1200 Comfort

- 12.1" widescreen TFT display, resolution 800 x 480, 16 million colors
- 1 PROFINET (2 ports with integrated switch) and 1 PROFIBUS interface
- Membrane keyboard with 34 function keys and system keyboard

### Function

- Display and changing of process parameters
- Function keys are used for directly triggering functions and actions in the key-operated devices and with KTP400. Up to 16 functions can be configured simultaneously on function keys. The function keys can also be used direct as PROFIBUS DP or PROFINET IO input I/O.
- Process display:
  - Vector graphic (various line and plane objects)
  - Dynamic positioning and dynamic showing/hiding of objects
  - Fully-graphical displays, plots, and bar graph display
  - Display of up to 8 trends per trend field; trend curve graphic with scroll and zoom functions for accessing the history and flexible selection of the representation period; read ruler for determining current values and display in a table
  - Comprehensive graphic libraries (SIMATIC HMI Symbol Library)
  - Icons: slider, gauge, clock
  - Cyclic function processing by alarm clock
- Multiplex function for variables
- Signaling system
  - Discrete alarms and analog alarms (limit alarms)
  - Freely-definable message classes (e. g. status/fault messages) for definition of acknowledgment response and display of message events
  - Status and fault messages with message history
  - Preconfigured message screen, message window, and message line
- Archiving of messages and process values (on SD/multimedia card/USB flash drive, etc. or network drives via Ethernet)
  - Various archive types: Circulating and sequence archive
  - Storage of archive data in standard Windows format (CSV)
  - Online evaluation of process value archives using trend curves
  - External evaluation using standard tools (MS Excel, MS Access) is possible
- Alarm log and shift log
- Print functions (see "Recommended printers")
- Language change
  - 32 online languages, 32 configuration languages including Asian and Cyrillic character sets
- Recipe management
  - With additional data storage (on SD/multimedia card/USB flash drive, etc.)
  - Online/offline processing on the panel
  - Storage of recipe data in standard Windows format (CSV)
  - External processing using standard tools (MS Excel, MS Access) is possible
- PG functionality STATUS/FORCE VAR in combination with SIMATIC S7
- Diagnostics display in combination with SIMATIC S7 supports fast troubleshooting
- Screen selection from PLC permits operator control from the PLC
- Display of HTML documents using MS Internet Explorer
- Visual Basic Script offers flexibility through implementing new functions incl. interfacing to tags (comparison operations, loop-through, etc.)
- Help texts for process pictures, alarms, and tags

# Operator panels

## Comfort Panels

### Comfort Panels – Standard

#### Function (continued)

- Arithmetic functions
- Limit value monitoring for reliable process control of inputs and outputs

#### Configuration

The configuration is implemented using the engineering software SIMATIC WinCC Comfort (TIA Portal).

#### Integration

The SIMATIC HMI Comfort Panels can be connected to:

- SIMATIC S7 controllers
- Third-party controllers
  - Allen Bradley DF1, Allen Bradley EtherNet/IP
  - Modicon MODBUS RTU, Modicon MODBUS TCP/IP
  - Mitsubishi FX, Mitsubishi MC TCP/IP
  - Omron Hostlink/Multilink
- Multi-protocol capability
- http communication with other SIMATIC HMI systems
- Over Ethernet (TCP/IP) to a higher-level PC, network printer

#### Note:

Further information can be found under "System interfaces".

### Technical specifications

Product type designation	6AV2 124-2DC01-0AX0 KTP400 Comfort	6AV2 124-0GC01-0AX0 TP700 Comfort	6AV2 124-0JC01-0AX0 TP900 Comfort	6AV2 124-0MC01-0AX0 TP1200 Comfort
<b>Display</b>				
Display type				
• Resolution (WxH in pixel)	480 x 272	800 x 480	800 x 480	
<b>Control elements</b>				
Control elements		Touch screen	Touch screen	Touch screen
Connection for mouse/keyboard/barcode reader	USB / USB / USB	USB / USB / USB	USB / USB / USB	USB / USB / USB
<b>Keyboard</b>				
• System keys	0			
• Numeric/alphabetical input	Yes / Yes	Yes / Yes	Yes / Yes	Yes / Yes
<b>Touch operation</b>				
• Touch screen	analog, resistive	analog, resistive	analog, resistive	analog, resistive
<b>Supply voltage</b>				
• Supply voltage	24 V DC	24 V DC	24 V DC	24 V DC
Rated current	0.13 A	0.5 A	0.75 A	0.85 A
<b>Memory</b>				
Type	Flash / RAM	Flash / RAM	Flash / RAM	Flash / RAM
Usable memory for user data	4 MB usable memory for user data			
<b>Type of output</b>				
Acoustics	Buzzer			
<b>Time of day</b>				
Clock				
• Type	Hardware clock, battery backup, synchronizable	Hardware clock, battery backup, synchronizable	Hardware clock, battery backup, synchronizable	Hardware clock, battery backup, synchronizable
<b>Interfaces</b>				
Multimedia card				
• Industrial Ethernet interface	1 x Ethernet (RJ45)	2 x Ethernet (RJ45)	2 x Ethernet (RJ45)	2 x Ethernet (RJ45)
<b>Protocols</b>				
Protocols (terminal link)				
• Sm@rtAccess	Yes	Yes	Yes	Yes
<b>EMC</b>				
Emission of radio interference acc. to EN 55 011				
• Emission of radio interferences acc. to EN 55 011 (limit class A)	Yes			
<b>Ambient conditions</b>				
• Operation (vertical installation)	0 °C to +50 °C	0 °C to +50 °C	0 °C to +50 °C	0 °C to +50 °C
• Operation (max. tilt angle)	0 °C to +40 °C	0 °C to +40 °C	0 °C to +40 °C	0 °C to +40 °C
• Transport, storage	-20 °C to +60 °C	-20 °C to +60 °C	-20 °C to +60 °C	-20 °C to +60 °C
• max. relative humidity	90 %	90 %	90 %	90 %
Mounting position	vertical	vertical	vertical	vertical
maximum permissible angle of inclination without external ventilation	+/- 35 °	+/- 35 °	+/- 35 °	+/- 35 °
Front	IP65	IP65	IP65	IP65
Rear	IP20	IP20	IP20	IP20

# Operator panels

## Comfort Panels

### Comfort Panels – Standard

#### Technical specifications (continued)

Product type designation	6AV2 124-2DC01-0AX0 KTP400 Comfort	6AV2 124-0GC01-0AX0 TP700 Comfort	6AV2 124-0JC01-0AX0 TP900 Comfort	6AV2 124-0MC01-0AX0 TP1200 Comfort
<b>Operating systems</b>				
Operating system	Windows CE	Windows CE	Windows CE	Windows CE
<b>Functionality under WinCC flexible / WinCC (TIA Portal)</b>				
Applications/options	see chapter 4: HMI software/SIMATIC WinCC flexible options and SIMATIC WinCC (TIA portal) options			
Number of Visual Basic Scripts	50	100	100	100
Task planner	Yes	Yes	Yes	Yes
Help system	Yes	Yes	Yes	Yes
Status/control	with SIMATIC S7	with SIMATIC S7	with SIMATIC S7	with SIMATIC S7
With alarm logging system (incl. buffer and acknowledgment)				
• Number of messages	2 000	4 000	4 000	4 000
• Bit messages	Yes	Yes	Yes	Yes
• Analog messages	Yes	Yes	Yes	Yes
• Message buffer	Ring buffer (n x 256 entries), retentive, maintenance-free	Ring buffer (n x 1024 entries), retentive, maintenance-free	Ring buffer (n x 1024 entries), retentive, maintenance-free	Ring buffer (n x 1024 entries), retentive, maintenance-free
Recipes				
• Recipes	100	300	300	300
• Data records per recipe	200	500	500	500
• Entries per data record	200	1000	1000	1000
Number of process images				
• Process images	500	500	500	500
• Variables	1 024	2 048	2 048	2 048
• Limit values	Yes	Yes	Yes	Yes
• Multiplexing	Yes	Yes	Yes	Yes
Image elements				
• Text objects	2,500 text elements			
• Graphic object	Bit maps, icons, vector graphics	Bit maps, icons, vector graphics	Bit maps, icons, vector graphics	Bit maps, icons, vector graphics
• dynamic objects	Diagrams, bar graphs, sliders, analog display, invisible buttons	Diagrams, bar graphs, sliders, analog display, invisible buttons	Diagrams, bar graphs, sliders, analog display, invisible buttons	Diagrams, bar graphs, sliders, analog display, invisible buttons
Lists				
• Text lists	300	500	500	500
• Graphic list	100	500	500	500
• Libraries	Yes	Yes	Yes	Yes
Archiving				
• Number of archives per project	10	50	50	50
• Number of measuring points per project	100	2 048	2 048	2 048
• Number of entries per archive	10 000	20 000	20 000	20 000
• Data storage format	CSV file, readable, e.g. with MS Excel, MS Access	CSV file, readable, e.g. with MS Excel, MS Access	CSV file, readable, e.g. with MS Excel, MS Access	CSV file, readable, e.g. with MS Excel, MS Access
• external evaluation	Can be read, e.g., in MS Excel, MS Access, etc.	Can be read, e.g., in MS Excel, MS Access, etc.	Can be read, e.g., in MS Excel, MS Access, etc.	Can be read, e.g., in MS Excel, MS Access, etc.
• Size of archive	Depending on free memory on ext. card/stick or on free hard disk memory via network drive	Depending on free memory on ext. card/stick or on free hard disk memory via network drive	Depending on free memory on ext. card/stick or on free hard disk memory via network drive	Depending on free memory on ext. card/stick or on free hard disk memory via network drive
• Online evaluation	Using trend curves	Using trend curves	Using trend curves	Using trend curves

**Technical specifications** (continued)

Product type designation	6AV2 124-2DC01-0AX0 KTP400 Comfort	6AV2 124-0GC01-0AX0 TP700 Comfort	6AV2 124-0JC01-0AX0 TP900 Comfort	6AV2 124-0MC01-0AX0 TP1200 Comfort
Security				
• Number of user groups	50	50	50	50
• Passwords exportable	Yes	Yes	Yes	Yes
• Number of user rights	32	32	32	32
Data carrier support				
• PC card	No	No	No	No
• CF card	No	No	No	No
• Multi Media Card	Yes	Yes	Yes	Yes
Recording				
• Recording/Printing	Alarms, report (shift report), color print, hardcopy	Alarms, report (shift report), color print, hardcopy	Alarms, report (shift report), color print, hardcopy	Alarms, report (shift report), color print, hardcopy
• Printer driver	ESC/P2, PCL3/PCL6	ESC/P2, PCL3/PCL6	ESC/P2, PCL3/PCL6	ESC/P2, PCL3/PCL6
Fonts				
• Keyboard fonts	US American (English)	US American (English)	US American (English)	US American (English)
Languages				
• Online languages	16	32	32	32
• Configuration languages	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H
• Character sets	Tahoma, Arial, Courier New, symbol languages, 4 additional character sets can be loaded, all freely scalable	Tahoma, Arial, Courier New, symbol languages, 4 additional character sets can be loaded, all freely scalable	Tahoma, Arial, Courier New, symbol languages, 4 additional character sets can be loaded, all freely scalable	Tahoma, Arial, Courier New, symbol languages, 4 additional character sets can be loaded, all freely scalable
Transfer (upload/download)				
• Transfer of configuration	MPI/PROFIBUS DP, USB, Ethernet, automatic transfer recognition	MPI/PROFIBUS DP, USB, Ethernet, automatic transfer recognition	MPI/PROFIBUS DP, USB, Ethernet, automatic transfer recognition	MPI/PROFIBUS DP, USB, Ethernet, automatic transfer recognition
I/O				
I/O devices	Printer, barcode reader	Printer, barcode reader	Printer, barcode reader	Printer, barcode reader
Dimensions and weight				
• Front of enclosure (W x H)	140 mm x 116 mm	214 mm x 158 mm		
Weight				
• Weight	0.6 kg	1.4 kg	1.9 kg	2.8 kg

# Operator panels

## Comfort Panels

### Comfort Panels – Standard

#### Technical specifications (continued)

Product type designation	6AV2 124-1DC01-0AX0 KP400 Comfort	6AV2 124-1GC01-0AX0 KP700 Comfort	6AV2 124-1JC01-0AX0 KP900 Comfort	6AV2 124-1MC01-0AX0 KP1200 Comfort
<b>Display</b>				
Display type				
• Resolution (WxH in pixel)	480 x 272	800 x 480	800 x 480	
<b>Control elements</b>				
Control elements	Membrane keyboard	Membrane keyboard	Membrane keyboard	Membrane keyboard
Connection for mouse/keyboard/barcode reader	USB / USB / USB	USB / USB / USB	USB / USB / USB	USB / USB / USB
Keyboard				
• System keys	28	28	28	28
• Numeric/alphabetical input	Yes / Yes	Yes / Yes	Yes / Yes	Yes / Yes
Touch operation				
• Touch screen	No	No	No	No
<b>Supply voltage</b>				
• Supply voltage	24 V DC	24 V DC	24 V DC	24 V DC
Rated current	0.13 A	0.5 A	0.75 A	0.85 A
<b>Memory</b>				
Type	Flash / RAM	Flash / RAM	Flash / RAM	Flash / RAM
Usable memory for user data	4 MB usable memory for user data			
<b>Type of output</b>				
Acoustics	Buzzer			
<b>Time of day</b>				
Clock				
• Type	Hardware clock, battery backup, synchronizable	Hardware clock, battery backup, synchronizable	Hardware clock, battery backup, synchronizable	Hardware clock, battery backup, synchronizable
<b>Interfaces</b>				
Multimedia card				
• Industrial Ethernet interface	1 x Ethernet (RJ45)	2 x Ethernet (RJ45)	2 x Ethernet (RJ45)	2 x Ethernet (RJ45)
<b>Protocols</b>				
Protocols (terminal link)				
• Sm@rtAccess	Yes	Yes	Yes	Yes
<b>Ambient conditions</b>				
• Operation (vertical installation)	0 °C to +50 °C	0 °C to +50 °C	0 °C to +50 °C	0 °C to +50 °C
• Operation (max. tilt angle)	0 °C to +40 °C	0 °C to +40 °C	0 °C to +40 °C	0 °C to +40 °C
• Transport, storage	-20 °C to +60 °C	-20 °C to +60 °C	-20 °C to +60 °C	-20 °C to +60 °C
• max. relative humidity	90 %	90 %	90 %	90 %
Mounting position	vertical	vertical	vertical	vertical
maximum permissible angle of inclination without external ventilation	+/- 35 °	+/- 35 °	+/- 35 °	+/- 35 °
Front	IP65	IP65	IP65	IP65
Rear	IP20	IP20	IP20	IP20
<b>Operating systems</b>				
Operating system	Windows CE	Windows CE	Windows CE	Windows CE



**Technical specifications** (continued)

Product type designation	6AV2 124-1DC01-0AX0 KP400 Comfort	6AV2 124-1GC01-0AX0 KP700 Comfort	6AV2 124-1JC01-0AX0 KP900 Comfort	6AV2 124-1MC01-0AX0 KP1200 Comfort
<b>Functionality under WinCC flexible / WinCC (TIA Portal)</b>				
Applications/options	see chapter 4: HMI software/SIMATIC WinCC flexible options and SIMATIC WinCC (TIA portal) options			
Number of Visual Basic Scripts	50	100	100	100
Task planner	Yes	Yes	Yes	Yes
Help system	Yes	Yes	Yes	Yes
Status/control	with SIMATIC S7	with SIMATIC S7	with SIMATIC S7	with SIMATIC S7
With alarm logging system (incl. buffer and acknowledgment)				
• Number of messages	2 000	4 000	4 000	4 000
• Bit messages	Yes	Yes	Yes	Yes
• Analog messages	Yes	Yes	Yes	Yes
• Message buffer	Ring buffer (n x 256 entries), retentive, maintenance-free	Ring buffer (n x 1024 entries), retentive, maintenance-free	Ring buffer (n x 1024 entries), retentive, maintenance-free	Ring buffer (n x 1024 entries), retentive, maintenance-free
Recipes				
• Recipes	100	300	300	300
• Data records per recipe	200	500	500	500
• Entries per data record	200	1000	1000	1000
Number of process images				
• Process images	500	500	500	500
• Variables	1 024	2 048	2 048	2 048
• Limit values	Yes	Yes	Yes	Yes
• Multiplexing	Yes	Yes	Yes	Yes
Image elements				
• Text objects	2,500 text elements	Bit maps, icons, vector graphics	Bit maps, icons, vector graphics	Bit maps, icons, vector graphics
• Graphic object	Bit maps, icons, vector graphics			
• dynamic objects	Diagrams, bar graphs, sliders, analog display, invisible buttons	Diagrams, bar graphs, sliders, analog display, invisible buttons	Diagrams, bar graphs, sliders, analog display, invisible buttons	Diagrams, bar graphs, sliders, analog display, invisible buttons
Lists				
• Text lists	300	500	500	500
• Graphic list	100	500	500	500
• Libraries	Yes	Yes	Yes	Yes
Archiving				
• Number of archives per project	10	50	50	50
• Number of measuring points per project	100	2 048	2 048	2 048
• Number of entries per archive	10 000	20 000	20 000	20 000
• Data storage format	CSV file, readable, e.g. with MS Excel, MS Access	CSV file, readable, e.g. with MS Excel, MS Access	CSV file, readable, e.g. with MS Excel, MS Access	CSV file, readable, e.g. with MS Excel, MS Access
• external evaluation	Can be read, e.g., in MS Excel, MS Access, etc.	Can be read, e.g., in MS Excel, MS Access, etc.	Can be read, e.g., in MS Excel, MS Access, etc.	Can be read, e.g., in MS Excel, MS Access, etc.
• Size of archive	Depending on free memory on ext. card/stick or on free hard disk memory via network drive	Depending on free memory on ext. card/stick or on free hard disk memory via network drive	Depending on free memory on ext. card/stick or on free hard disk memory via network drive	Depending on free memory on ext. card/stick or on free hard disk memory via network drive
• Online evaluation	Using trend curves	Using trend curves	Using trend curves	Using trend curves

# Operator panels

## Comfort Panels

### Comfort Panels – Standard

#### Technical specifications (continued)

Product type designation	6AV2 124-1DC01-0AX0 KP400 Comfort	6AV2 124-1GC01-0AX0 KP700 Comfort	6AV2 124-1JC01-0AX0 KP900 Comfort	6AV2 124-1MC01-0AX0 KP1200 Comfort
Security				
• Number of user groups	50	50	50	50
• Passwords exportable	Yes	Yes	Yes	Yes
• Number of user rights	32	32	32	32
Data carrier support				
• PC card	No	No	No	No
• CF card	No	No	No	No
• Multi Media Card	Yes	Yes	Yes	Yes
Recording				
• Recording/Printing	Alarms, report (shift report), color print, hardcopy	Alarms, report (shift report), color print, hardcopy	Alarms, report (shift report), color print, hardcopy	Alarms, report (shift report), color print, hardcopy
• Printer driver	ESC/P2, PCL3/PCL6	ESC/P2, PCL3/PCL6	ESC/P2, PCL3/PCL6	ESC/P2, PCL3/PCL6
Fonts				
• Keyboard fonts	US American (English)	US American (English)	US American (English)	US American (English)
Languages				
• Online languages	32	32	32	32
• Configuration languages	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H
• Character sets	Tahoma, Arial, Courier New, symbol languages, 4 additional character sets can be loaded, all freely scalable	Tahoma, Arial, Courier New, symbol languages, 4 additional character sets can be loaded, all freely scalable	Tahoma, Arial, Courier New, symbol languages, 4 additional character sets can be loaded, all freely scalable	Tahoma, Arial, Courier New, symbol languages, 4 additional character sets can be loaded, all freely scalable
Transfer (upload/download)				
• Transfer of configuration	MPI/PROFIBUS DP, USB, Ethernet, automatic transfer recognition	MPI/PROFIBUS DP, USB, Ethernet, automatic transfer recognition	MPI/PROFIBUS DP, USB, Ethernet, automatic transfer recognition	MPI/PROFIBUS DP, USB, Ethernet, automatic transfer recognition
I/O				
I/O devices	Printer, barcode reader	Printer, barcode reader	Printer, barcode reader	Printer, barcode reader
Dimensions and weight				
• Front of enclosure (W x H)		308 mm x 204 mm		
Weight				
• Weight	0.8 kg	2.2 kg	2.7 kg	4.4 kg

Ordering data		Order No.			Order No.
<i>SIMATIC HMI Comfort Panels, Touch</i>			<i>Starter kits for HMI Comfort Panels</i>		
SIMATIC HMI KTP400 Comfort, Key and Touch	E	6AV2 124-2DC01-0AX0	Consisting of: The respective HMI Comfort Panel SIMATIC WinCC Comfort SIMATIC HMI Manual Collection (DVD), 5 languages Ethernet cable, 2 m SIMATIC HMI memory card 2 GB 10 protective membranes for touch screen devices		
SIMATIC HMI TP700 Comfort	E	6AV2 124-0GC01-0AX0			
SIMATIC HMI TP900 Comfort	E	6AV2 124-0JC01-0AX0			
SIMATIC HMI TP1200 Comfort	E	6AV2 124-0MC01-0AX0			
<i>SIMATIC HMI Comfort Panels, Key</i>					
SIMATIC HMI KP400 Comfort, Key	E	6AV2 124-1DC01-0AX0	Starter kit for HMI KTP400 Comfort, Key and Touch	E	6AV2 181-4DB20-0AX0
SIMATIC HMI KP700 Comfort, Key	E	6AV2 124-1GC01-0AX0	Starter kit for HMI TP700 Comfort	E	6AV2 181-4GB00-0AX0
SIMATIC HMI KP900 Comfort, Key	E	6AV2 124-1JC01-0AX0	Starter kit for HMI TP900 Comfort	E	6AV2 181-4JB00-0AX0
SIMATIC HMI KP1200 Comfort, Key	E	6AV2 124-1MC01-0AX0	Starter kit for HMI TP1200 Comfort	E	6AV2 181-4MB00-0AX0
			Starter kit for HMI KP400 Comfort, Key	E	6AV2 181-4DB10-0AX0
			Starter kit for HMI KP700 Comfort, Key	E	6AV2 181-4GB10-0AX0
			Starter kit for HMI KP900 Comfort, Key	E	6AV2 181-4JB10-0AX0
			Starter kit for HMI KP1200 Comfort, Key	E	6AV2 181-4MB10-0AX0

E: Subject to export regulations: AL: 91999 and ECCN: 5D002ENCU

# Operator panels

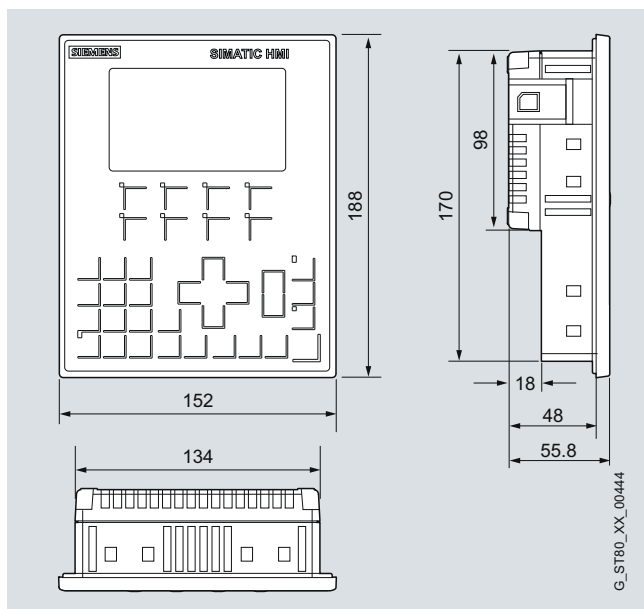
## Comfort Panels

### Comfort Panels – Standard

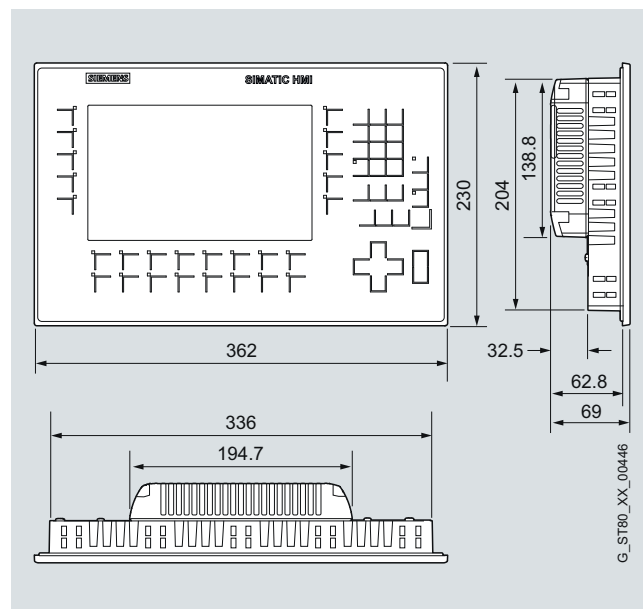
#### Dimensional drawings

All specifications in mm. Panel cutout see technical specifications.

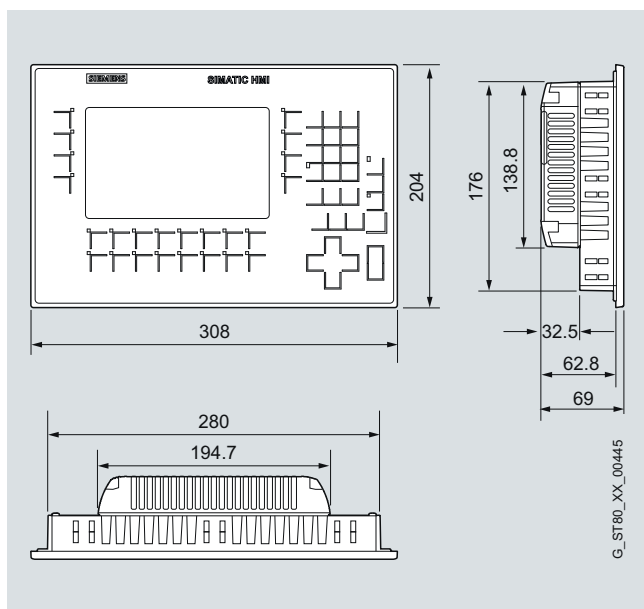
2



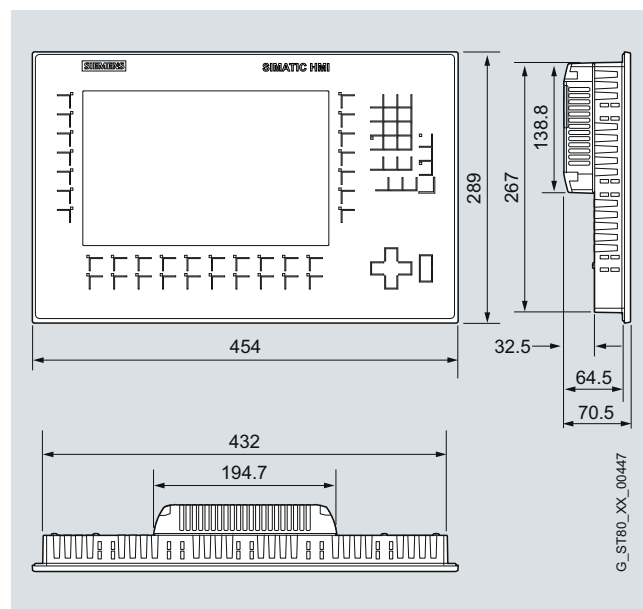
KP400 Comfort



KP900 Comfort

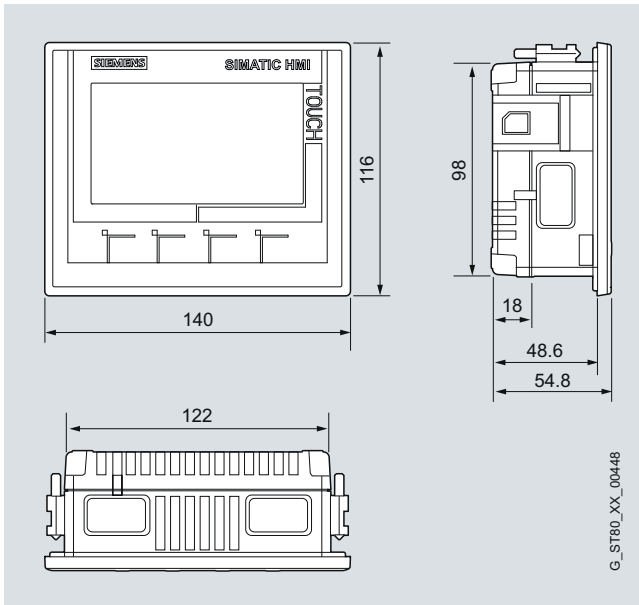


KP700 Comfort

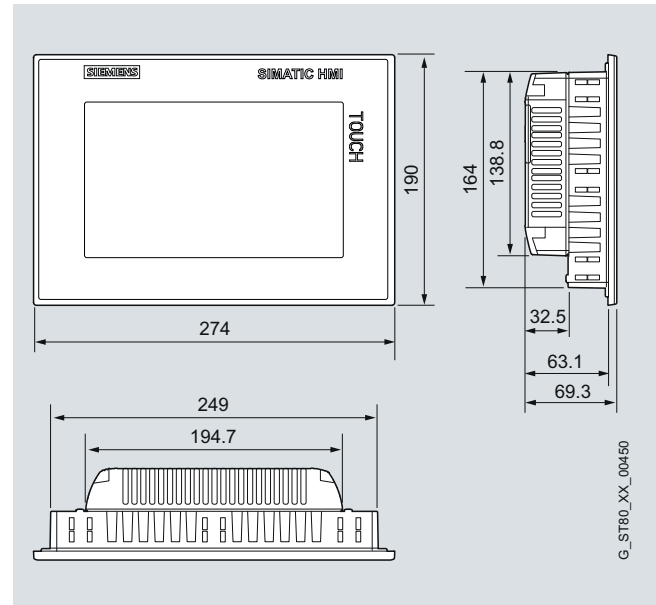


KP1200 Comfort

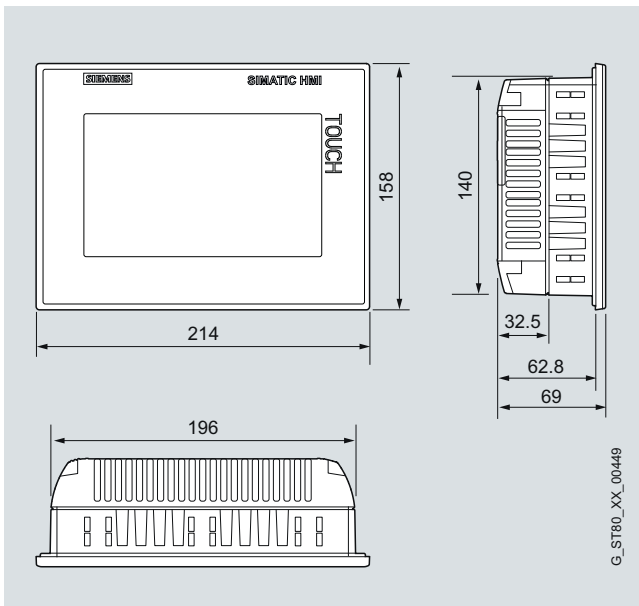
### Dimensional drawings (continued)



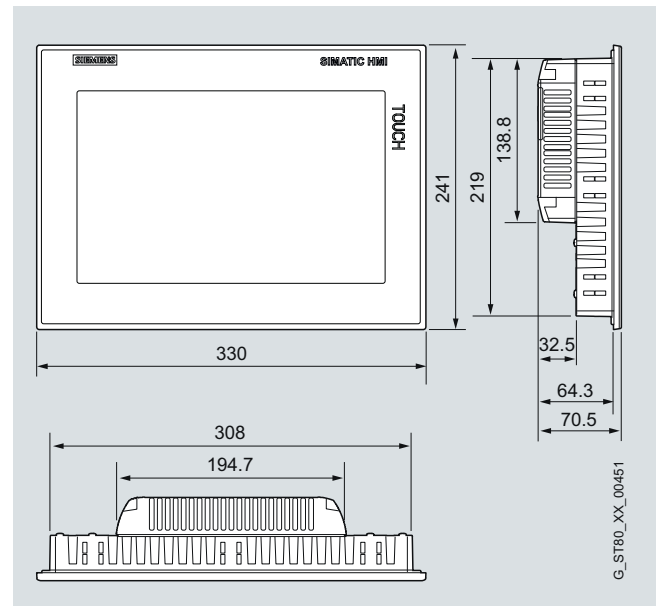
KTP400 Comfort



TP900 Comfort



TP700 Comfort



TP1200 Comfort

# Operator panels

## Comfort Panels

### Comfort Panels – Standard

#### More information

Further information can be found on the Internet at:

[www.siemens.com/simatic-comfort-panels](http://www.siemens.com/simatic-comfort-panels)

#### Note:

Do you require a specific modification or extension to the products described here? Under "Customized products", you can find information about additional and generally available products for the sector, and about the possibilities for customized modification and adaptation..

### Overview



#### SIMATIC Mobile Panel

- Mobile operator panel for direct operator control of the plant and machine from any point
- Supports an optimum view of the workpiece or process and, at the same time, direct access and visual contact with the operator panel
- Versatile use thanks to easy unplugging and replugging during normal operation (Mobile Panel 177 and Mobile Panel 277) or
- Wireless freedom (Mobile Panel 277(F) IWLAN)
- Pixel-graphics, high-luminance color display with touch screen (analog/resistive)
- PROFIBUS or PROFINET communication, PROFINET over WLAN for Mobile Panel 277(F) IWLAN
- Freely-configurable function keys with customized labels (with LED) (not for Mobile Panel 277 10")

#### SIMATIC Mobile Panel 177 and SIMATIC Mobile Panel 277

- Two three-stage acknowledgement buttons;  
Optional versions include:
  - STOP pushbutton
  - STOP button, handwheel, key-operated switch and illuminated pushbutton (not for Mobile Panel 277 10")
- Communication is supported via a serial link, MPI/PROFIBUS or PROFINET
- Connection point recognition for local identification of the device based on the connection point ID
- Fast system availability after plugging into the terminal boxes
- Connection to the controller and power supply is made via the terminal box and the connecting cable

#### SIMATIC Mobile Panel 277(F) IWLAN

- Wireless, mobile operator panel for flexible and location-independent system and machine operation
- WLAN communication in accordance with IEEE 802.11 a (b/g) and support of PROFINET
- Powerful batteries and flexible concept for changing permit battery replacement "on the fly" without interrupting operation
- Effective range limitation and the local identification of the device by using transponder technology
- Low-cost, safety-related mobile operator control and monitoring via RFID technology (MOBY D) for plants with pre-installed safety resources (e.g. robot cells)

- Optional versions with: Handwheel, key switch and illuminated pushbutton
- Fail-safe operator controls of the SIMATIC Mobile Panel 277F IWLAN using PROFIsafe:
  - Two three-stage acknowledgment buttons
  - Emergency stop button

#### IWLAN Access Points SCALANCE W for SIMATIC Mobile Panel 277(F) IWLAN

- The Access Points of the product line SCALANCE W-780 are ideally suited for setting up Industrial Wireless LAN (IWLAN) radio networks for 2.4 GHz and 5 GHz with data rates of up to 54 Mbit/s; they can be used for all applications that require a high degree of operational reliability, even under extremely harsh ambient conditions
- Suitable for any application:
  - SCALANCE W-788 for cabinet-free installation
  - SCALANCE W-786 for cabinet-free installation, also with integrated antennas
  - SCALANCE W-784 for installation in control cabinets or integrated into devices
- Wireless communication suitable for use in applications with high real-time and reliability requirements, such as PROFINET, PROFIsafe or video
- Standard-compliant thanks to IEEE 802.11 support, additional functional expansions especially for use with increased reliability
- Effective encryption mechanisms protect against unauthorized access, spying, tapping, and corruption
- The SINEMA E engineering tool, wizards and online help support planning, simulation, configuration and documentation; easy management with the web server and SNMP
- Fast commissioning of the Access Points thanks to the optional swap medium PRESET-PLUG and fast device replacement in the event of a fault thanks to the optional swap medium C-PLUG (Configuration Plug)
- Accessories such as antennas, connectors, cables incl. RCoax cables (leaky wave cables) that are tuned to one another for a reliable radio link

#### Benefits

- Versatile possibilities for connection to the process, both wired and wireless
- Increased productivity, minimum engineering overhead, reduction in life-cycle costs
- Fast and accurate set-up as well as positioning
- Reliable operation with mature security concept
- Ergonomic and compact with low weight
- Rugged for industrial use
- Integral component of Totally Integrated Automation (TIA):
- Graphic library is available with preconfigured screen objects
- The data in the message buffer is stored retentively
- Can be used worldwide:
  - 32 online languages (incl. Asian and Cyrillic character sets) can be configured
  - Switchover between up to 16 online languages is possible directly on the Mobile Panel
- Reduction of service and commissioning costs due to:
  - Backup/restore via a process interface or optionally via a standard Multi Media Card / SD Card
  - Transfer of configuration with automatic transfer detection via all device interfaces
  - Long service life of the backlit display
- Easy engineering supported through comprehensive documentation on the SIMATIC HMI Manual Collection DVD

# Operator panels

## Mobile Panels

### Mobile Panels

#### Application

Regardless of the industry or application, if mobility is required for the on-site control and monitoring of machines and plants, SIMATIC mobile panels offer some crucial advantages: The machine operators or commissioning engineers are able to work exactly where they have the best view of the workpiece or process.

Even for larger production facilities, complex or enclosed machines, long materials handling or production lines and conveyor systems, mobile operator panels allow fast and precise setting up and positioning during commissioning. They also ensure shorter downtimes during retooling, maintenance or repairs.

#### Design

- Ergonomic and compact with various holder and grip positions (suitable for right-handed and left-handed persons)
  - Pixel-graphics, high-luminance color display and touch screen (analog/resistive)
  - Freely configurable and inscribable function keys (with LED) (not on Mobile Panel 277 10")
  - The device is resistant to various oils, greases and general cleaning agents
  - Extremely shock-resistant due to the double-walled construction and the round housing
  - Dust-tight and splashwater protected enclosure with IP65 all-round protection
  - Slot for a standard Multi Media Card / SD Card for backing up/restoring the configuration or recipes
  - Two three-stage acknowledgment buttons
  - Optional device versions with
    - STOP button or
    - STOP button, handwheel, key-operated switch and illuminated pushbutton (not for Mobile Panel 277 10")
    - The STOP button is specially secured with a protective collar. If the STOP button is looped into the emergency-stop circuit, its function corresponds to that of an emergency stop button.
  - Integrated serial, MPI/PROFIBUS (up to 12 Mbit/s) and/or PROFINET interface (up to 100 Mbit/s)
- or
- Connection to the PLC via the rugged and reliable terminal boxes with degree of protection IP65:
    - "Basic" terminal box: Enables the STOP button to be integrated into the safety circuit
    - "Plus" terminal box: Enables the STOP button to be integrated into the safety circuit without interruption when disconnecting the device. The emergency stop circuit remains closed regardless of whether a Mobile Panel is plugged in or not. If the Mobile Panel is disconnected during operation, the emergency stop circuit in the terminal box Plus is automatically closed which prevents triggering of the emergency stop circuit.
  - Fast system availability after plugging into the terminal box
    - An optional rechargeable battery pack can be used to avoid restarting of the Mobile Panel (following brief disconnection from the terminal box).
  - Detection of the connection point can be used to perform machine-specific HMI authorizations or actions depending on the selected connection point

#### Advanced safety concept

The two acknowledgement buttons (acc. to EN 60204-1) with three switching steps each ensure the protection of personnel and machines in critical situations. They are integrated into the handle on the back.

The STOP button (acc. to EN 60204-1) is hard-wired and positively latches when pressed. It can be looped into the emergency-stop circuit of a plant in which case it takes on the functionality of an emergency stop button, but is distinct with its gray color. This ensures that it cannot be mistaken for the emergency stop equipment. This is especially important when the Mobile Panel is not connected to the machine. SIMATIC Mobile Panels offer the option of making safety functions available on a mobile basis at any point of a machine or plant.

STOP and acknowledgement buttons are implemented according to safety regulations with two circuits and comply with the requirements of Category 3 PLd according to EN ISO 13849-1:2008.

#### Innovative connection concept

The Mobile Panel is simply plugged into the terminal box wherever it is needed in the plant and is immediately ready for use. The terminal box can be installed anywhere, even outside the control cabinet. It ensures fault-free plugging and unplugging during normal operation and, therefore, allows the operator-control location to be easily and safely changed when several connection points are available in a plant or machine.

The location of a Mobile Panel can be clearly identified by setting an ID number on the terminal box. This identifier permits the user to configure Mobile Panels in such a way that, for example, the user interface changes according to the connection point. The Mobile Panel establishes the connection to the controllers after being plugged into the terminal boxes and following a short start-up period. An optional rechargeable battery pack can be used to avoid restarting of the Mobile Panel (following brief disconnection from the terminal box).

#### Configuration possibilities with emergency stop loop-in

Device versions with STOP button can be wired into the emergency stop circuit of a machine or plant by means of the terminal boxes. When the STOP button on the Mobile Panel is pressed, the emergency stop function is activated. The STOP button on the Mobile Panel supplements, but does not replace the emergency stop equipment installed on the machine according to EN 418. When the Mobile Panel is unplugged, "Plus" versions of the terminal box automatically close the emergency stop circuit, thereby ensuring safe and fault-free changeover (swapping).

#### Connection at one point on the machine

When the "Basic" terminal box version is used, unplugging the Mobile Panel interrupts the emergency stop circuit and, therefore, triggers the emergency stop function. This configuration is, therefore, best suited for applications in which the Mobile Panel is connected to a fixed point on the machine (example configuration: Mobile Panel 177).

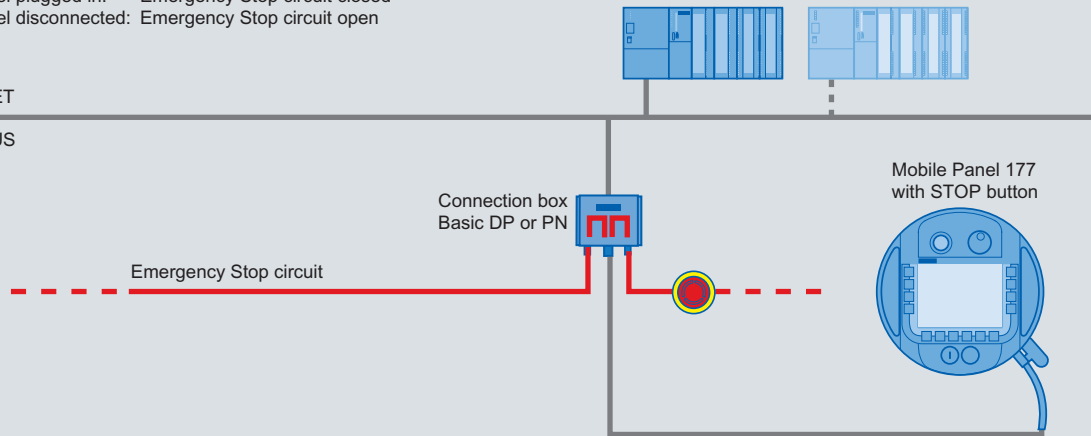


### Design (continued)

#### Wiring into the Emergency Stop circuit with connection box Basic DP or PN

- Mobile Panel plugged in: Emergency Stop circuit closed
- Mobile Panel disconnected: Emergency Stop circuit open

- PROFINET
- PROFIBUS
- MPI



G\_ST80\_XX\_00068

#### Variable connection at different points of a machine or plant

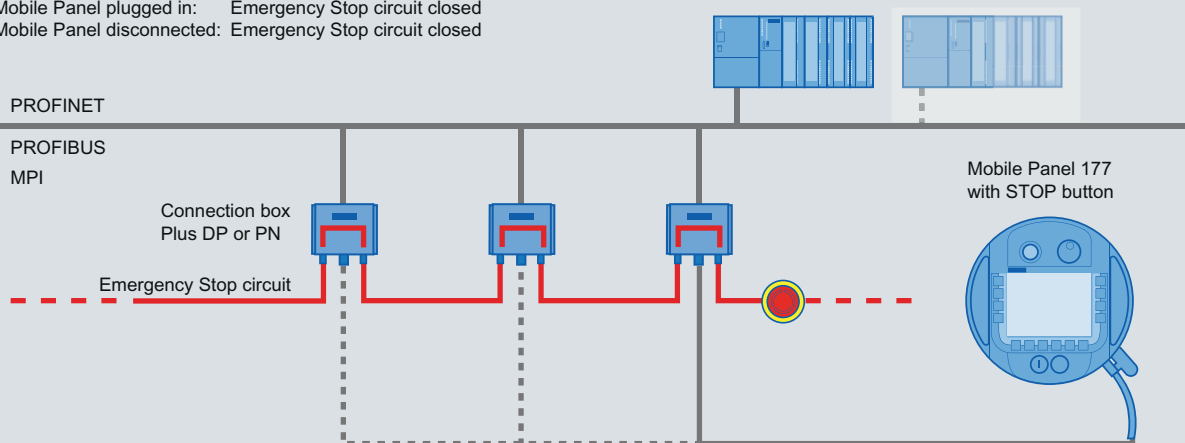
If a Mobile Panel with a STOP button is used in combination with a "Plus" terminal box, a configuration is possible in which the Mobile Panel can be used flexibly and is also looped into the emergency stop circuit. The emergency stop circuit remains closed regardless of whether a Mobile Panel is plugged into a terminal box or not. When the Mobile Panel is plugged in, the

equipment is looped into the emergency stop circuit and when the STOP button is pressed, the circuit will be interrupted and the emergency stop function triggered. If the Mobile Panel is unplugged during operation, the emergency stop circuit is automatically closed in the "Plus" terminal box version (example configuration: Mobile Panel 177).

#### Automatic closure of the Emergency Stop circuit by connection box Plus DP or PN

- Mobile Panel plugged in: Emergency Stop circuit closed
- Mobile Panel disconnected: Emergency Stop circuit closed

- PROFINET
- PROFIBUS
- MPI



G\_ST80\_XX\_00348

#### SIMATIC Mobile Panel 277(F) IWLAN

- WLAN communication in accordance with IEEE 802.11 a (b/g) and support of PROFINET
- Two versions as a simple WLAN HMI device without safety function (Mobile Panel 277 IWLAN) as well as two versions as fail-safe PROFIsafe device with emergency stop button and acknowledgement button (Mobile Panel 277F IWLAN)
- Powerful batteries and flexible concept for changing permit battery replacement "on the fly" without interrupting operation thanks to integrated backup battery
- Limited effective range (Mobile Panel 277F IWLAN) and local identification of the device (Mobile Panel 277 (F) IWLAN) due to the use of transponder technology, comparable with connection point recognition on the cabled Mobile Panels or alternatively via RFID technology for systems with existing safety mechanisms, such as robot cell
- Optional versions with: Handwheel, key switch and illuminated pushbutton
- Fail-safe control elements of the SIMATIC Mobile Panel 277F IWLAN using PROFIsafe:
  - Two three-stage acknowledgement buttons
  - Emergency stop button

# Operator panels

## Mobile Panels

### Mobile Panels

#### Design (continued)

##### *Mobile operator control and monitoring in the Industrial Wireless LAN*

The SIMATIC Mobile Panel 277(F) IWLAN enables the integration as a WLAN client in wireless LAN networks. This makes it possible to implement a full-fledged mobile HMI device, which can also perform tasks that are not possible with stationary or cabled devices.

Reliable and rugged WLAN networks can be created using SCALANCE W IWLAN access points. The configuration and simulation software SINEMA E permits reliable WLAN planning ahead of time.

The device is configured – just like the cabled Mobile Panels – with WinCC flexible. The compatibility and continuity permit easy and problem-free migration of existing projects to the wireless device.

Transponders have been developed especially for the Mobile Panel 277(F) IWLAN and can be used for the local identification of the Mobile Panel in the plant. Comparable with the connection point recognition (Box-ID) for cabled Mobile Panels, these transponders can be used to configure location-dependent functions, e.g. the automatic switchover to a different display when a certain zone is accessed, or releasing/blocking of functions from the control zone.

On the fail-safe Mobile Panel with enable button and emergency stop button (Mobile Panel 277F IWLAN), the transponders perform another task: The safety-related release of the enable button for hazardous operations. Alternatively, the Mobile Panel 277F IWLAN (RFID Tag, MOBY D) for already delineated safety zones, such as robot cells, can be used. The monitoring of the protection zones is assumed by the alternative measures, not by the RFID Tag.

##### *Full safety functionality - even wireless!*

The SIMATIC Mobile Panel 277F IWLAN is integrated via PROFINET and PROFIsafe into the safety-oriented program (Distributed Safety) of a SIMATIC F-CPU. Incorporating and removing Mobile Panels is possible during runtime. Both of the safety-related functions "acknowledgement button" and "emergency stop button" comply with SIL 3 according to IEC 61508 or PLe/Cat. 4 according to EN ISO 13849-1 and are TÜV-certified. A detailed safety manual is delivered with the Mobile Panel 277F IWLAN, along with a CD containing the required F function blocks for integration in the F-program. The F-FBs are tested and certified - this enables a problem-free and simple integration of the Mobile Panel.

The emergency stop button is immediately available WLAN-wide as soon as the Mobile Panel 277F IWLAN is booted up and the PROFISAFE connection is established with the F-CPU via IWLAN. To use the acknowledgment button locally, transponders or RFID tags must be installed in the intended control stations. This allows the Mobile Panel to register for safety-related operation.

Configuration of the transponder and the effective range is also handled comfortably with WinCC flexible. After configuration and commissioning, the effective range in the system is approved to ensure the consistency of the planning and configuration. The effect that the emergency stop button and the acknowledgment button should have and which response to certain events (e.g. leaving the WLAN range) they should have is defined by configuring the F-FBs in the F-CPU – taking account of the safety-relevant properties of the machine. If the Mobile Panel is not used any longer or if the device should be removed, it is to be moved to a specified location.

The Mobile Panel 277F IWLAN offers extensive diagnostic and status information (e.g. concerning the battery charge status, WLAN functionality, and quality of the effective range) and thus provides the user – if necessary, supported by the integrated vibration alarm – with full control of the device and system operation at all times.

##### *System components for wireless Mobile Panels*

Besides the five device versions, the following system components are offered (to be ordered individually):

For charging the battery in the Mobile Panel (which can be replaced without tools), either

- the table-top power supply (incl. power cable for EU, US, UK, JP) is required (only suitable for operation under laboratory/office conditions) or
- the charging station, which enables the device to be safely put down and charged (incl. lock for securing the device in the charging station), as well as charging up to two additional batteries at the same time (IP65)

For quick and interruption-free battery replacement during operation

- Additional battery with LED indicator for indicating the charge status

To create zones (optional for all versions) and mandatory for using the enable button in the effective ranges with Mobile Panel 277F IWLAN:

- Transponder (incl. batteries for self-sufficient operation over several years, no cabling is required on the transponder).
- For the use of the Mobile Panel 277F IWLAN (RFID Tag) in robot cells, the MOBY D RFID card system:  
MOBY D MDS D 100 (6GT2600-0AD10) or MDS D 124 (6GT2600-0AC00).

### Overview



SIMATIC Mobile Panel 177 PN with terminal box

### Function

- Input/output fields for displaying and changing process values
- Function keys are used for directly triggering functions and actions. Up to 16 functions can be configured simultaneously on function keys. The function keys can also be used as PROFIBUS DP input I/O or directly as PROFINET IO. The function keys can also be reconfigured as system keys. A function that is used frequently such as "Acknowledge message" can be allocated to a function key this way.
- Additional operator controls such as handwheel, keyswitch and illuminated pushbutton can be connected to a variable or as a direct control over PROFIBUS DP input I/O (DP direct keys) or PROFINET IO (direct keys).
- Buttons are used for directly triggering functions and actions. Up to 16 functions can be configured simultaneously on buttons.
- Graphics can be used as symbols instead of text to "label" function keys or buttons. They can also be used as full-screen background images. In the configuration software, a comprehensive library is available containing graphics and a wide variety of objects. All editors with an OLE interface can be used as graphic editors (such as PaintShop, Designer or CorelDraw).
- Vector graphics; simple geometric basic forms (e.g. lines, circles and rectangles) can be created direct in the configuring software
- Text fields for labeling function keys, process images and process values in any character size
- Curve displays and bars are used for the display of dynamic values in graphic-based format
- Display selection from the controller permits operator prompting from the controller
- Language selection; 5 online languages, 32 configuration languages incl. Asian and Cyrillic character sets
- Language-dependent texts and graphics
- User administration (security)
  - User-oriented access protection according to requirements of specific sectors
  - Authentication with user name and password
  - User-group-specific rights
- Signaling system
  - Discrete alarms and analog alarms (limit value messages) as well as the ALARM\_S message frame procedure for SIMATIC S7 and SIMOTION
  - Freely definable message classes (e.g. status/fault messages) for definition of acknowledgment response and display of message events
- Message buffer
  - Non-volatile, maintenance-free and battery-free message buffer. The messages are retained even when the Mobile Panel is disconnected.

# Operator panels

## Mobile Panels – 170 series

### SIMATIC Mobile Panel 177

#### Function (continued)

- Recipe management
  - With additional data storage (on optional Multimedia Card/SD Card)
  - Online/offline processing on the panel
  - Storage of recipe data in standard Windows format (CSV)
  - External processing using standard tools such as Excel and Access is possible
- Help texts for process images, messages and variables
- Arithmetic functions
- Limit value monitoring for reliable process control of inputs and outputs
- Indicator light for machine and plant status indication
- Scheduler for cyclic function execution
- Dynamic positioning of objects and dynamic showing/hiding of objects
- Permanent window and template concept
  - Creation of screen templates:
- Simple maintenance and configuration thanks to:
  - Backup/restore of the project, operating system, recipe data records and firmware on the optional standard Multimedia Card/SD card
  - Backup and restoration (Backup/Restore) of configuration, operating system, recipe data sets and firmware on a PC using ProSave
  - Project transfer/return via MPI/PROFIBUS DP/serial or PROFINET
  - Automatic transfer identification
  - Individual contrast settings
  - Project simulation directly on the configuration computer
- WinCC flexible options
  - Sm@rtService for remote operator control and monitoring of SIMATIC HMI systems based on TCP/IP networks
  - Sm@rtAccess for communication between HMI systems based on TCP/IP networks. Remote access to recipe data sets, passwords and information specific to the HMI system, and much more.
- Migration
  - Any existing Mobile Panel 170 terminal boxes can be used in conjunction with the Mobile Panel 177 because they are fully compatible. The function of connection-point detection can only be used in conjunction with a Mobile Panel 177 with a DP or PN terminal box.
  - Projects created with WinCC flexible for the Mobile Panel can simply continue to be used in WinCC V11

#### Configuration

Configuration is carried out with the SIMATIC WinCC flexible, 2005 or later, Compact, Standard or Advanced engineering software (see SIMATIC WinCC flexible HMI software/engineering software) or WinCC V11.

SIMATIC WinCC is the logical further development of the field-proven WinCC flexible family. Projects generated using WinCC flexible can be easily migrated to WinCC. If WinCC flexible is started directly from SIMATIC Manager, the data in STEP 7 can be accessed directly while configuring the panel. Duplicated data input and data management is, therefore, avoided.

#### Integration

In the case of the Mobile Panel 177 DP, communication with the PLC can be implemented via PROFIBUS DP at up to 12 Mbit/s, via MPI or via the serial interface. The necessary interfaces are already onboard. A variety of drivers – even for PLCs from other suppliers – are supplied as standard.

In the case of the Mobile Panel 177 PN, communication with the PLC can be implemented via PROFINET at up to 100 Mbit/s. The necessary interfaces are already onboard. These are supplied with the device.

Using the terminal boxes the Mobile Panel 177 can be connected to (see "System interfaces"):

- SIMATIC S7-200/-300/-400
- SIMATIC WinAC Software/Slot PLC
- SIMOTION
- SIMATIC S5
- SIMATIC 505 (not on Mobile Panel 177 PN)
- Third-party controllers
  - Allen Bradley
  - Mitsubishi (not on Mobile Panel 177 PN)
  - Modicon Modbus
  - GE-Fanuc (not on Mobile Panel 177 PN)
  - LG GLOFA GM (not on Mobile Panel 177 PN)
  - OMRON (not on Mobile Panel 177 PN)
  - Telemecanique Uni-Telway (not on Mobile Panel 177 PN)
- SINUMERIK
  - (optionally with "SINUMERIK HMI copy license WinCC flexible CE"; "SINUMERIK HMI engineering package WinCC flexible" is additionally required for configuring; For further details, see Catalog NC 60)

Using the DP junctions boxes the Mobile Panel 177 PN can be connected to:

- SIMATIC S7-200/-300/-400
- WinAC Software
- SIMOTION

#### Note:

The unwanted operation of a Mobile Panel 177 DP (PROFIBUS) on a PN (PROFINET) terminal box and vice versa is not possible and is mechanically blocked. Further information can be found under "System interfaces".

### Technical specifications

SIMATIC Mobile Panel 177 PN (PROFINET)	6AV6 645-0AA01-0AX0 with integrated acknowledgment button	6AV6 645-0AB01-0AX0 with integrated acknowledgment button and STOP button	6AV6 645-0AC01-0AX0 with integrated acknowledgment button, STOP button, handwheel, keyswitch and illuminated pushbutton
<b>Display</b>			
Size	5.7" (121 mm x 92 mm)	5.7" (121 mm x 92 mm)	5.7" (121 mm x 92 mm)
Display type	STN, 256 colors	STN, 256 colors	STN, 256 colors
Resolution (pixels)			
• Resolution (WxH in pixel)	320 x 240	320 x 240	320 x 240
Backlighting			
• MTBF backlighting (at 25 °C)	about 50,000 hours	about 50,000 hours	about 50,000 hours
<b>Control elements</b>			
Operating options	Keys and Touch	Keys and Touch	Keys and Touch
Function keys, programmable	14 function keys, 8 with LEDs	14 function keys, 8 with LEDs	14 function keys, 8 with LEDs
Keyboard			
• System keys	0	0	0
• Numeric/alphabetical input	Yes / Yes	Yes / Yes	Yes / Yes
Touch operation			
• Touch screen	analog, resistive	analog, resistive	analog, resistive
Special operator controls			
• STOP pushbutton	No	2-channel, enforced latching (can be looped into the emergency stop circuit)	2-channel, enforced latching (can be looped into the emergency stop circuit)
• Acknowledgement button	2-channel, number of positions: 3	2-channel, number of positions: 3	2-channel, number of positions: 3
• Key-operated switch	No	No	Yes, 3 switch settings
• Illuminated pushbutton	No	No	Yes
• Handwheel	No	No	Yes
<b>Expansions for operator control of the process</b>			
DP direct LEDs (LEDs as S7 output I/O)	F1...F8	F1...F8	F1...F8
DP direct keys (screen buttons and keys as S7 input I/O)	F1...F14	F1...F14	F1...F14
<b>Supply voltage</b>			
Input voltage			
• Supply voltage	via connection box	via connection box	via connection box
<b>Backup battery</b>			
Battery operation	maximum buffer time 10 min	maximum buffer time 10 min	maximum buffer time 10 min
<b>Processor</b>			
Processor	RISC 32-bit, 200 MHz	RISC 32-bit, 200 MHz	RISC 32-bit, 200 MHz
<b>Memory</b>			
Type	Flash / RAM	Flash / RAM	Flash / RAM
Usable memory for user data	2048 KB of usable memory for user data / no user memory for options	2048 KB of usable memory for user data / no user memory for options	2048 KB of usable memory for user data / no user memory for options
<b>Type of output</b>			
LED colors	Green	Green	Green
Acoustics	No	No	No
<b>Interfaces</b>			
Interfaces	1 x RS422, 1 x RS485 (max. 12 Mbit/s)	1 x RS422, 1 x RS485 (max. 12 Mbit/s)	1 x RS422, 1 x RS485 (max. 12 Mbit/s)
USB port	No	No	No
PC card slot	No	No	No
CF card slot	No	No	No
Multimedia card	combined	combined	combined
Industrial Ethernet			
• Industrial Ethernet interface	No	No	No

# Operator panels

## Mobile Panels – 170 series

### SIMATIC Mobile Panel 177

#### Technical specifications (continued)

SIMATIC Mobile Panel 177 PN (PROFINET)	6AV6 645-0AA01-0AX0 with integrated acknowledgment button	6AV6 645-0AB01-0AX0 with integrated acknowledgment button and STOP button	6AV6 645-0AC01-0AX0 with integrated acknowledgment button, STOP button, handwheel, keyswitch and illuminated pushbutton
<b>Ambient conditions</b>			
Operating temperature			
• Operation	0 °C to +40 °C	0 °C to +40 °C	0 °C to +40 °C
Storage/transport temperature			
• Transport, storage	-20 °C to +60 °C	-20 °C to +60 °C	-20 °C to +60 °C
Relative humidity			
• max. relative humidity	80 %	80 %	80 %
Drop height	1.5 m	1.5 m	1.5 m
<b>Degree and class of protection</b>			
IP65 housing	Yes	Yes	Yes
<b>Standards, approvals, certificates</b>			
Certifications	CE, cULus, C-TICK, SIBE	CE, cULus, C-TICK, SIBE	CE, cULus, C-TICK, SIBE
Performance level acc. to EN ISO 13849-1	d	d	d
Safety category according to EN954-1	Safety category according to EN954-1 (enabling button, STOP button if present) 3	Safety category according to EN954-1 (enabling button, STOP button if present) 3	Safety category according to EN954-1 (enabling button, STOP button if present) 3
<b>Operating systems</b>			
Operating system	Windows CE	Windows CE	Windows CE
<b>Configuration</b>			
Configuration software			
• Configuration tool	see "Configuration overview" from page 2/3		
<b>Functionality under WinCC flexible/WinCC (TIA Portal)</b>			
Applications/options	see chapter 4: HMI software/SIMATIC WinCC flexible options and SIMATIC WinCC (TIA portal) options		
Number of Visual Basic Scripts	Not possible	Not possible	Not possible
Task planner	Yes	Yes	Yes
Help system	Yes	Yes	Yes
Status/control	with SIMATIC S7	with SIMATIC S7	with SIMATIC S7
With alarm logging system (incl. buffer and acknowledgment)			
• Number of messages	2 000	2 000	2 000
• Bit messages	Yes	Yes	Yes
• Analog messages	Yes	Yes	Yes
• Message buffer	Ring buffer (n x 256 entries), retentive, maintenance-free	Ring buffer (n x 256 entries), retentive, maintenance-free	Ring buffer (n x 256 entries), retentive, maintenance-free
Recipes			
• Recipes	100	100	100
• Data records per recipe	200	200	200
• Entries per data record	200	200	200
• Recipe memory	32 KB integrated Flash, expandable	32 KB integrated Flash, expandable	32 KB integrated Flash, expandable
Number of process images			
• Process images	500	500	500
• Variables	1 024	1 024	1 024
• Limit values	Yes	Yes	Yes
• Multiplexing	Yes	Yes	Yes
Image elements			
• Text objects	2,500 text elements	2,500 text elements	2,500 text elements
• Graphic object	Bit maps, vector graphics	Bit maps, vector graphics	Bit maps, vector graphics
• dynamic objects	Diagrams, bar graphs, sliders, invisible buttons	Diagrams, bar graphs, sliders, invisible buttons	Diagrams, bar graphs, sliders, invisible buttons



**Technical specifications (continued)**

<b>SIMATIC Mobile Panel 177 PN (PROFINET)</b>	<b>6AV6 645-0AA01-0AX0 with integrated acknowledgment button</b>	<b>6AV6 645-0AB01-0AX0 with integrated acknowledgment button and STOP button</b>	<b>6AV6 645-0AC01-0AX0 with integrated acknowledgment button, STOP button, handwheel, keyswitch and illuminated pushbutton</b>
Lists			
• Text lists	300	300	300
• Graphics list	100	100	100
• Libraries	Yes	Yes	Yes
Security			
• Number of user groups	50	50	50
• Passwords exportable	Yes	Yes	Yes
• Number of user rights	32	32	32
Data carrier support			
• PC card	No	No	No
• CF card	No	No	No
• Multimedia Card	Yes	Yes	Yes
Recording			
• Recording/Printing	-	-	-
• Printer driver	-	-	-
Fonts			
• Keyboard fonts	US American (English)	US American (English)	US American (English)
Languages			
• Configuration languages	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H
• Character sets	Tahoma, WinCC flexible Standard, symbol languages, all freely scalable	Tahoma, WinCC flexible Standard, symbol languages, all freely scalable	Tahoma, WinCC flexible Standard, symbol languages, all freely scalable
Transfer (upload/download)			
• Transfer of configuration	MPI/PROFIBUS DP, serial, automatic transfer recognition	MPI/PROFIBUS DP, serial, automatic transfer recognition	MPI/PROFIBUS DP, serial, automatic transfer recognition
Process coupling			
• Connection to controller	see "System interfaces" from page 2/178		
Expandability/openness			
• Open Platform Program	Yes	Yes	Yes
<b>Mechanics/material</b>			
Type of housing (front)	Plastic	Plastic	Plastic
<b>Dimensions and weight</b>			
Dimensions			
• Housing diameter/depth (mm)	Dia 245 mm / D 58 mm	Dia 245 mm / D 58 mm	Dia 245 mm / D 58 mm
Weight			
• Weight	1.3 kg	1.3 kg	1.3 kg

# Operator panels

## Mobile Panels – 170 series

### SIMATIC Mobile Panel 177

#### Technical specifications (continued)

SIMATIC Mobile Panel 177 DP (MPI/PROFIBUS)	6AV6 645-0BA01-0AX0 with integrated acknow- ledgment button	6AV6 645-0BB01-0AX0 with integrated acknow- ledgment button and STOP button	6AV6 645-0BC01-0AX0 with integrated acknow- ledgment button, STOP button, handwheel, keyswitch and illuminated pushbutton
<b>Display</b>			
Size	5.7" (121 mm x 92 mm)	5.7" (121 mm x 92 mm)	5.7" (121 mm x 92 mm)
Display type	STN, 256 colors	STN, 256 colors	STN, 256 colors
Resolution (pixels) • Resolution (WxH in pixel)	320 x 240	320 x 240	320 x 240
Backlighting • MTBF backlighting (at 25 °C)	about 50,000 hours	about 50,000 hours	about 50,000 hours
<b>Control elements</b>			
Operating options	Keys and Touch	Keys and Touch	Keys and Touch
Function keys, programmable	14 function keys, 8 with LEDs	14 function keys, 8 with LEDs	14 function keys, 8 with LEDs
Keyboard • System keys • Numeric/alphabetical input	0 Yes / Yes	0 Yes / Yes	0 Yes / Yes
Touch operation • Touch screen	analog, resistive	analog, resistive	analog, resistive
Special operator controls • STOP pushbutton	No	2-channel, enforced latching (can be looped into the emergency stop circuit)	2-channel, enforced latching (can be looped into the emergency stop circuit)
• Acknowledgement button • Key-operated switch • Illuminated pushbutton • Handwheel	2-channel, number of positions: 3 No No No	2-channel, number of positions: 3 No No No	2-channel, number of positions: 3 Yes, 3 switch settings Yes Yes
<b>Expansions for operator control of the process</b>			
DP direct LEDs (LEDs as S7 output I/O)	F1...F8	F1...F8	F1...F8
DP direct keys (screen buttons and keys as S7 input I/O )	F1...F14	F1...F14	F1...F14
<b>Supply voltage</b>			
Input voltage • Supply voltage	via connection box	via connection box	via connection box
<b>Backup battery</b>			
Battery operation	maximum buffer time 10 min	maximum buffer time 10 min	maximum buffer time 10 min
<b>Processor</b>			
Processor	RISC 32-bit, 200 MHz	RISC 32-bit, 200 MHz	RISC 32-bit, 200 MHz
<b>Memory</b>			
Type	Flash / RAM	Flash / RAM	Flash / RAM
Usable memory for user data	2048 KB of usable memory for user data / no user memory for options	2048 KB of usable memory for user data / no user memory for options	2048 KB of usable memory for user data / no user memory for options
<b>Type of output</b>			
LED colors	Green	Green	Green
Acoustics	No	No	No
<b>Interfaces</b>			
Interfaces	1 x RS485, 1 x Ethernet (RJ45)	1 x RS485, 1 x Ethernet (RJ45)	1 x RS485, 1 x Ethernet (RJ45)
USB port	No	No	No
PC card slot	No	No	No
CF card slot	No	No	No
Multimedia card	combined	combined	combined
Industrial Ethernet • Industrial Ethernet interface	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)



**Technical specifications (continued)**

<b>SIMATIC Mobile Panel 177 DP (MPI/PROFIBUS)</b>	<b>6AV6 645-0BA01-0AX0 with integrated acknowledgment button</b>	<b>6AV6 645-0BB01-0AX0 with integrated acknowledgment button and STOP button</b>	<b>6AV6 645-0BC01-0AX0 with integrated acknowledgment button, STOP button, handwheel, keyswitch and illuminated pushbutton</b>
<b>Ambient conditions</b>			
Operating temperature			
• Operation	0 °C to +40 °C	0 °C to +40 °C	0 °C to +40 °C
Storage/transport temperature			
• Transport, storage	-20 °C to +60 °C	-20 °C to +60 °C	-20 °C to +60 °C
Relative humidity			
• max. relative humidity	80 %	80 %	80 %
Drop height	1.5 m	1.5 m	1.5 m
<b>Degree and class of protection</b>			
IP65 housing	Yes	Yes	Yes
<b>Standards, approvals, certificates</b>			
Certifications	CE, cULus, C-TICK, SIBE	CE, cULus, C-TICK, SIBE	CE, cULus, C-TICK, SIBE
Performance level acc. to EN ISO 13849-1	d	d	d
Safety category according to EN954-1	Safety category according to EN954-1 (enabling button, STOP button if present) 3	Safety category according to EN954-1 (enabling button, STOP button if present) 3	Safety category according to EN954-1 (enabling button, STOP button if present) 3
<b>Operating systems</b>			
Operating system	Windows CE	Windows CE	Windows CE
<b>Configuration</b>			
Configuration software			
• Configuration tool	see chapter 4: HMI software/SIMATIC WinCC flexible options and SIMATIC WinCC (TIA portal) options		
<b>Functionality under WinCC flexible/WinCC (TIA Portal)</b>			
Applications/options	Sm@rtService, Sm@rtAccess	Sm@rtService, Sm@rtAccess	Sm@rtService, Sm@rtAccess
Number of Visual Basic Scripts	Not possible	Not possible	Not possible
Task planner	Yes	Yes	Yes
Help system	Yes	Yes	Yes
Status/control	with SIMATIC S7	with SIMATIC S7	with SIMATIC S7
With alarm logging system (incl. buffer and acknowledgment)			
• Number of messages	2 000	2 000	2 000
• Bit messages	Yes	Yes	Yes
• Analog messages	Yes	Yes	Yes
• Message buffer	Ring buffer (n x 256 entries), retentive, maintenance-free	Ring buffer (n x 256 entries), retentive, maintenance-free	Ring buffer (n x 256 entries), retentive, maintenance-free
Recipes			
• Recipes	100	100	100
• Data records per recipe	200	200	200
• Entries per data record	200	200	200
• Recipe memory	32 KB integrated Flash, expandable	32 KB integrated Flash, expandable	32 KB integrated Flash, expandable
Number of process images			
• Process images	500	500	500
• Variables	1 024	1 024	1 024
• Limit values	Yes	Yes	Yes
• Multiplexing	Yes	Yes	Yes
Image elements			
• Text objects	2,500 text elements	2,500 text elements	2,500 text elements
• Graphics object	Bit maps, vector graphics	Bit maps, vector graphics	Bit maps, vector graphics
• dynamic objects	Diagrams, bar graphs, sliders, invisible buttons	Diagrams, bar graphs, sliders, invisible buttons	Diagrams, bar graphs, sliders, invisible buttons
Lists			
• Text lists	300	300	300
• Graphic list	100	100	100
• Libraries	Yes	Yes	Yes

# Operator panels

## Mobile Panels – 170 series

### SIMATIC Mobile Panel 177

#### Technical specifications (continued)

SIMATIC Mobile Panel 177 DP (MPI/PROFIBUS)	6AV6 645-0BA01-0AX0 with integrated acknowledgment button	6AV6 645-0BB01-0AX0 with integrated acknowledgment button and STOP button	6AV6 645-0BC01-0AX0 with integrated acknowledgment button, STOP button, handwheel, keyswitch and illuminated pushbutton
Security			
• Number of user groups	50	50	50
• Passwords exportable	Yes	Yes	Yes
• Number of user rights	32	32	32
Data carrier support			
• PC card	No	No	No
• CF card	No	No	No
• Multimedia Card	Yes	Yes	Yes
Recording			
• Recording/Printing	-	-	-
• Printer driver	-	-	-
Fonts			
• Keyboard fonts	US American (English)	US American (English)	US American (English)
Languages			
• Configuration languages	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H
• Character sets	Tahoma, WinCC flexible Standard, symbol languages, all freely scalable	Tahoma, WinCC flexible Standard, symbol languages, all freely scalable	Tahoma, WinCC flexible Standard, symbol languages, all freely scalable
Transfer (upload/download)			
• Transfer of configuration	serial, Ethernet, automatic transfer recognition	serial, Ethernet, automatic transfer recognition	serial, Ethernet, automatic transfer recognition
Process coupling			
• Connection to controller	S7-200, S7- 300/400, Win AC, PC (TCP/IP), SIMOTION, Modicon (Modbus), see the chapter "System interfaces"	S7-200, S7- 300/400, Win AC, PC (TCP/IP), SIMOTION, Modicon (Modbus), see the chapter "System interfaces"	S7-200, S7- 300/400, Win AC, PC (TCP/IP), SIMOTION, Modicon (Modbus), see the chapter "System interfaces"
Expandability/openness			
• Open Platform Program	Yes	Yes	Yes
I/O			
I/O devices	Printer	Printer	Printer
<b>Mechanics/material</b>			
Type of housing (front)	Plastic	Plastic	Plastic
<b>Dimensions and weight</b>			
Dimensions			
• Housing diameter/depth (mm)	Dia 245 mm / D 58 mm	Dia 245 mm / D 58 mm	Dia 245 mm / D 58 mm
Weight			
• Weight	1.3 kg	1.3 kg	1.3 kg

# Operator panels

## Mobile Panels – 170 series

### SIMATIC Mobile Panel 177

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Ordering data	Order No.	Order No.
<b>SIMATIC Mobile Panel 177 DP (MPI/PROFIBUS) <sup>1)</sup></b> <ul style="list-style-type: none"> <li>• With integrated acknowledgement button</li> <li>• With integrated acknowledgement button and STOP pushbutton</li> <li>• With integrated acknowledgement button, STOP button, handwheel, key-operated switch and illuminated pushbutton</li> </ul>	E <b>6AV6 645-0AA01-0AX0</b> E <b>6AV6 645-0AB01-0AX0</b> E <b>6AV6 645-0AC01-0AX0</b>	<b>SIMATIC HMI Manual Collection B</b> <b>6AV6 691-1SA01-0AX0</b> Electronic documentation, on DVD 5 languages (English, French, German, Italian and Spanish); contains: all currently available user manuals, manuals and communication manuals for SIMATIC HMI
<b>SIMATIC Mobile Panel 177 PN (PROFINET) <sup>1)</sup></b> <ul style="list-style-type: none"> <li>• With integrated acknowledgement button</li> <li>• With integrated acknowledgement button and STOP pushbutton</li> <li>• With integrated acknowledgement button, STOP button, handwheel, key-operated switch and illuminated pushbutton</li> </ul>	E <b>6AV6 645-0BA01-0AX0</b> E <b>6AV6 645-0BB01-0AX0</b> E <b>6AV6 645-0BC01-0AX0</b>	<b>System components for Mobile Panels</b> <b>DP terminal box for Mobile Panels (MPI/PROFIBUS)</b> <ul style="list-style-type: none"> <li>• Basic</li> <li>• Plus</li> </ul> <b>PN terminal box for Mobile Panel (PROFINET)</b> <ul style="list-style-type: none"> <li>• Basic</li> <li>• Plus</li> </ul> <b>DP connecting cable (MPI/PROFIBUS)</b> Standard cables <ul style="list-style-type: none"> <li>• 2 m</li> <li>• 5 m</li> <li>• 10 m</li> <li>• 15 m</li> <li>• 25 m</li> </ul> Intermediate lengths <sup>2)</sup> <ul style="list-style-type: none"> <li>• 8 m</li> <li>• 20 m</li> </ul> <b>PN connecting cable (PROFINET)</b> Standard cables <ul style="list-style-type: none"> <li>• 2 m</li> <li>• 5 m</li> <li>• 8 m</li> <li>• 10 m</li> <li>• 15 m</li> <li>• 20 m</li> <li>• 25 m</li> </ul>
<b>Configuration</b> with SIMATIC WinCC flexible	see chapter 4	
<b>Documentation (to be ordered separately)</b> <b>Operating Instructions for Mobile Panel 177</b> <ul style="list-style-type: none"> <li>• German</li> <li>• English</li> <li>• French</li> <li>• Italian</li> <li>• Spanish</li> </ul>	<b>6AV6 691-1DK01-0AA0</b> <b>6AV6 691-1DK01-0AB0</b> <b>6AV6 691-1DK01-0AC0</b> <b>6AV6 691-1DK01-0AD0</b> <b>6AV6 691-1DK01-0AE0</b>	<b>6AV6 671-5AE00-0AX0</b> <b>6AV6 671-5AE10-0AX0</b>  <b>6AV6 671-5AE01-0AX0</b> <b>6AV6 671-5AE11-0AX0</b>  <b>6XV1 440-4AH20</b> <b>6XV1 440-4AH50</b> <b>6XV1 440-4AN10</b> <b>6XV1 440-4AN15</b> <b>6XV1 440-4AN25</b>  <b>6XV1 440-4AH80</b> <b>6XV1 440-4AN20</b>
<b>User Manual WinCC flexible Compact/Standard/Advanced</b> <ul style="list-style-type: none"> <li>• German</li> <li>• English</li> <li>• French</li> <li>• Italian</li> <li>• Spanish</li> </ul>	<b>6AV6 691-1AB01-3AA0</b> <b>6AV6 691-1AB01-3AB0</b> <b>6AV6 691-1AB01-3AC0</b> <b>6AV6 691-1AB01-3AD0</b> <b>6AV6 691-1AB01-3AE0</b>	
<b>WinCC flexible Communication User Manual</b> <ul style="list-style-type: none"> <li>• German</li> <li>• English</li> <li>• French</li> <li>• Italian</li> <li>• Spanish</li> </ul>	<b>6AV6 691-1CA01-3AA0</b> <b>6AV6 691-1CA01-3AB0</b> <b>6AV6 691-1CA01-3AC0</b> <b>6AV6 691-1CA01-3AD0</b> <b>6AV6 691-1CA01-3AE0</b>	
		<b>Accessories</b> see HMI accessories

A: Subject to export regulations: AL: N and ECCN: EAR99H

B: Subject to export regulations: AL: N and ECCN: EAR99S

E: Subject to export regulations: AL: 9I999 and ECCN: 5D002ENCU

<sup>1)</sup> The system components (connecting cables and terminal boxes) must be ordered separately.<sup>2)</sup> Delivery time approximately 6 weeks

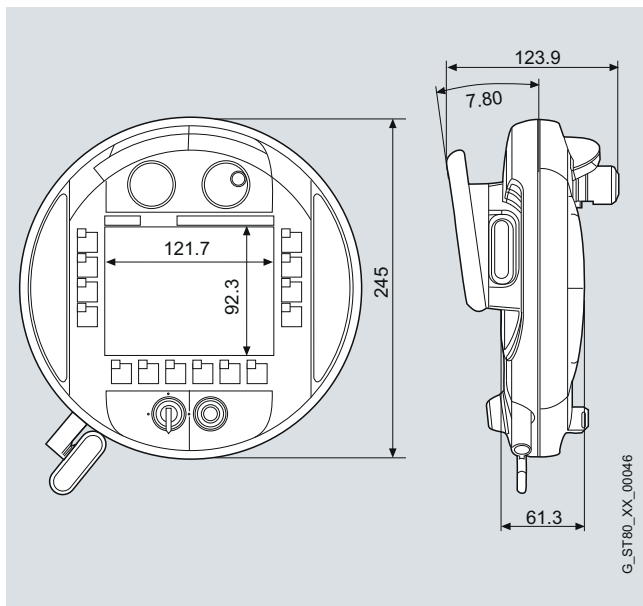
# Operator panels

## Mobile Panels – 170 series

### SIMATIC Mobile Panel 177

#### Dimensional drawings

All specifications in mm. Panel cutout see technical specifications.



Mobile Panel 177 – front view and side view

#### More information

Additional information is available on the Internet at:

[www.siemens.com/simatic-mobile-panels](http://www.siemens.com/simatic-mobile-panels)

#### Note:

Do you require a specific modification or extension to the products described here? Under "Customized products", you can find information about additional and generally available products for the sector, and about the possibilities for customized modification and adaptation.

# Operator panels

## Mobile Panels - 270 series

### SIMATIC Mobile Panel 277

#### Overview



#### Function

- Input/output fields for displaying and changing of process values
- Function keys are used for directly triggering functions and actions. Up to 16 functions can be configured simultaneously on function keys. The function keys can also be used as PROFIBUS DP input I/O or directly as PROFINET IO. The function keys can also be reconfigured as system keys. A frequently used function such as "Acknowledge alarm" can thus be assigned to a function key. No function keys are available on the Mobile Panel 277 10".
- Additional command components such as handwheel, keyswitch and illuminated pushbutton can be connected to a variable or as a direct control over PROFIBUS DP input I/O (DP direct keys) or PROFINET IO (direct keys). No additional operator controls are available on the Mobile Panel 277 10".
- Buttons are used for direct triggering of functions and actions. Up to 16 functions can be configured simultaneously on buttons.
- Graphics can be used as symbols instead of text for "labeling" function keys or buttons. They can also be used as full-screen background images. In the configuration software, a comprehensive library is available containing graphics and a wide variety of objects. All editors with an OLE interface can be used as graphic editors (such as PaintShop, Designer or CorelDraw).
- Vector graphics simple geometric basic forms (e.g. lines, circles and rectangles) can be created directly in the configuration software.
- Text fields for labeling function keys, process displays, and process values in any font size.
- Trend views and bars are used for the graphic display of dynamic values.
- Display selection from the controller permits operator prompting from the controller.
- Presentation of HTML documents with MS Pocket Internet Explorer.
- Visual Basic Script, flexibility thanks to the implementation of new functions including linking to variables (comparison operations, loops, etc.).
- Language switching 16 online languages, 32 configuration languages incl. Asiatic and Cyrillic character sets
  - Language-dependent texts and graphics
- User administration (security)
  - User-oriented access protection according to requirements of specific sectors
  - Authentication with user name and password
  - User-group-specific rights
- Signaling system
  - Discrete alarms and analog alarms (limit value messages) as well as the ALARM\_S message frame procedure for SIMATIC S7 and SIMOTION
  - Freely definable message classes (e.g., status/fault messages) for definition of acknowledgment response and display of alarm events
- Message buffer
  - Non-volatile, maintenance-free and battery-free message buffer. The messages are retained even when the Mobile Panel is disconnected

# Operator panels

## Mobile Panels - 270 series

### SIMATIC Mobile Panel 277

#### Function (continued)

- Recipe management
  - With additional data storage (on optional Multimedia Card/SD Card)
  - Online/offline processing on the panel
  - Storage of recipe data in standard Windows format (CSV)
  - External processing using standard tools such as Excel and Access is possible
- Help texts for process images, messages and variables.
- Arithmetic functions
- Limit value monitoring for reliable process control of inputs and outputs.
- Indicator light for machine and plant status indication.
- Scheduler for cyclic function processing.
- Dynamic positioning of objects and dynamic showing/hiding of objects
- Permanent window and template concept
  - Creation of screen templates:
- Simple maintenance and configuration thanks to:
  - Backup/restore of the project, operating system, recipe data records and firmware on the optional standard Multimedia Card/SD Card
  - Backup and restoration of configuration, operating system, recipe data sets and firmware on a PC using ProSave
  - Project transfer/return over MPI/PROFIBUS DP/serial or PROFINET
  - Automatic transfer detection
  - Individual contrast settings
  - Project simulation directly on the configuration computer
- WinCC flexible options
  - Sm@rtService for remote operator control and monitoring of SIMATIC HMI systems based on TCP/IP networks
  - Sm@rtAccess for communication between HMI systems based on TCP/IP networks. Remote access to recipe data records, passwords and HMI system-specific information, and much more.
  - OPC server: Communication with applications (e. g. MES, ERP, or applications in the office sector) from various manufacturers (see HMI Software/runtime software SIMATIC WinCC flexible/WinCC flexible RT options)
  - Audit

#### Configuration

Configuration is carried out with the SIMATIC WinCC flexible Standard or Advanced configuration software (see SIMATIC WinCC flexible HMI software/engineering software). SIMATIC WinCC flexible is the logical further development of the field-proven ProTool family. Projects generated using ProTool can be easily migrated to WinCC. If WinCC flexible is started directly from SIMATIC Manager, data in STEP 7 can be accessed directly when the panel is configured. Double data entry and data storage are prevented this way.

#### Integration

The SIMATIC Mobile Panel 277 is generally provided for optional PROFIBUS or PROFINET communication. No distinction is made at device level.

This means the device can either be operated

- for the **communication via MPI/PROFIBUS** with the DP cables and connection to the **DP "Basic"** or **"Plus"** connection boxes or
- for the **communication via PROFINET** with the PN cables and connection to the **PN "Basic"** or **"Plus"** connection boxes.

A variety of drivers – even for PLCs from other suppliers – are supplied as standard.

Using the DP connection boxes, the Mobile Panel 277 DP can be connected to:

- SIMATIC S7-200/-300/-400
- SIMATIC WinAC Software/Slot PLC
- SIMOTION
- SIMATIC S5
- SIMATIC 505
- PLCs from other manufacturers
  - Allen Bradley
  - Mitsubishi
  - Modicon Modbus
  - GE-Fanuc
  - LG GLOFA GM
  - OMRON
- SINUMERIK (optionally with "SINUMERIK HMI copy licence WinCC flexible CE"; "SINUMERIK HMI engineering package WinCC flexible" is additionally required for configuring; For further details, see Catalog NC 60)

Using the PN connection boxes, the Mobile Panel 277 can be connected to:

- SIMATIC S7-200/-300/-400
- WinAC Software
- SIMOTION
- Over Ethernet (TCP/IP) to a higher-level PC, network printer

#### Note:

Further information can be found under "System interfaces".

### Technical specifications

SIMATIC Mobile Panel 277	6AV6 645-0CA01-0AX0 8" with integrated acknowledgment button	6AV6 645-0CB01-0AX0 8" with integrated acknowledgment button and STOP button	6AV6 645-0CC01-0AX0 8" with integrated acknowledgment button, STOP button, handwheel, keyswitch and illuminated pushbutton	6AV6 645-0BE02-0AX0 10" with integrated acknowledgment button and STOP button
<b>Display</b>				
Size	7.5"	7.5"	7.5"	10.4"
Display type	TFT, 65536 colors	TFT, 65536 colors	TFT, 65536 colors	TFT, 65536 colors
Resolution (pixels) • Resolution (WxH in pixel)	640 x 480	640 x 480	640 x 480	800 x 600
Backlighting • MTBF backlighting (at 25 °C)	about 50,000 hours	about 50,000 hours	about 50,000 hours	about 50,000 hours
<b>Control elements</b>				
Operating options	Keys and Touch	Keys and Touch	Keys and Touch	Touch
Function keys, programmable	18 function keys, 18 with LEDs	18 function keys, 18 with LEDs	18 function keys, 18 with LEDs	None
Connection for mouse/keyboard/barcode reader	USB / USB / USB	USB / USB / USB	USB / USB / USB	USB / USB / USB
Keyboard • System keys • Numeric/alphabetical input	Yes / Yes	Yes / Yes	Yes / Yes	0 Yes / Yes
Touch operation • Touch screen	analog, resistive	analog, resistive	analog, resistive	analog, resistive
Special operator controls • STOP pushbutton	No	2-channel, enforced latching (can be looped into the emergency stop circuit)	2-channel, enforced latching (can be looped into the emergency stop circuit)	2-channel, enforced latching (can be looped into the emergency stop circuit)
• Acknowledgement button	2-channel, number of positions: 3	2-channel, number of positions: 3	2-channel, number of positions: 3	2-channel, number of positions: 3
• Key-operated switch	No	No	Yes, 3 switch settings	No
• Illuminated pushbutton	No	No	Yes; Two illuminated pushbuttons	No
• Handwheel	No	No	Yes	No
<b>Expansions for operator control of the process</b>				
DP direct LEDs (LEDs as S7 output I/O)	F1...F18	F1...F18	F1...F18	
DP direct keys (screen buttons and keys as S7 input I/O)	F1...F18, Number of bytes for configurable buttons: 10	F1...F18, Number of bytes for configurable buttons: 10	F1...F18, Number of bytes for configurable buttons: 10	Number of bytes for configurable buttons: 10
<b>Supply voltage</b>				
Input voltage • Supply voltage	via connection box	via connection box	via connection box	via connection box, DC
<b>Backup battery</b>				
Battery operation	maximum buffer time 10 min	maximum buffer time 10 min	maximum buffer time 10 min	maximum buffer time 10 min
• Charging duration				5 h
• Number of loading cycles, min				500
<b>Processor</b>				
Processor	ARM, 520 MHz	ARM, 520 MHz	ARM, 520 MHz	ARM, 520
<b>Memory</b>				
Type	Flash / RAM	Flash / RAM	Flash / RAM	Flash / RAM
Usable memory for user data	6 MB usable memory for user data	6 MB usable memory for user data	6 MB usable memory for user data	6 MB usable memory for user data



# Operator panels

## Mobile Panels - 270 series

### SIMATIC Mobile Panel 277

#### Technical specifications (continued)

SIMATIC Mobile Panel 277	6AV6 645-0CA01-0AX0 8" with integrated acknowledgment button	6AV6 645-0CB01-0AX0 8" with integrated acknowledgment button and STOP button	6AV6 645-0CC01-0AX0 8" with integrated acknowledgment button, STOP button, handwheel, keyswitch and illuminated pushbutton	6AV6 645-0BE02-0AX0 10" with integrated acknowledgment button and STOP button
<b>Type of output</b>				
LED colors	Green	Green	Green	
<b>Time of day</b>				
Clock				
• Type	Hardware clock, battery backup, synchronizable	Hardware clock, battery backup, synchronizable	Hardware clock, battery backup, synchronizable	Hardware clock, battery backup, synchronizable
<b>Interfaces</b>				
Interfaces	1 x RS422, 1 x RS485, 1 x Ethernet (RJ45) (max. 12 Mbit/s)	1 x RS422, 1 x RS485, 1 x Ethernet (RJ45) (max. 12 Mbit/s)	1 x RS422, 1 x RS485, 1 x Ethernet (RJ45) (max. 12 Mbit/s)	1 x RS422, 1 x RS485, 1 x Ethernet (RJ45) (max. 12 Mbit/s)
USB port	1 x USB	1 x USB	1 x USB	1 x USB
Multi Media Card slot	1 MMC/SD card slot	1 MMC/SD card slot	1 MMC/SD card slot	
Multimedia card				combined
Industrial Ethernet				
• Industrial Ethernet interface	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)
<b>Protocols</b>				
PROFINET				Yes
PROFINET IO				Yes
<b>Ambient conditions</b>				
Operating temperature				
• Operation	0 °C to +40 °C	0 °C to +40 °C	0 °C to +40 °C	0 °C to +40 °C
Storage/transport temperature				
• Transport, storage	-20 °C to +60 °C	-20 °C to +60 °C	-20 °C to +60 °C	-20 °C to +60 °C
Relative humidity				
• max. relative humidity	80 %	80 %	80 %	80 %
Drop height	1.2 m	1.2 m	1.2 m	1 m
<b>Degree and class of protection</b>				
IP65 housing	Yes	Yes	Yes	Yes
<b>Standards, approvals, certificates</b>				
Certifications	CE, cULus, C-TICK, SIBE	CE, cULus, C-TICK, SIBE	CE, cULus, C-TICK, SIBE	CE, cULus, C-TICK, SIBE
Performance level acc. to EN ISO 13849-1	d	d	d	d
Safety category according to EN954-1	Safety category according to EN954-1 (enabling button, STOP button if present) 3	Safety category according to EN954-1 (enabling button, STOP button if present) 3	Safety category according to EN954-1 (enabling button, STOP button if present) 3	Safety category according to EN954-1 (enabling button, STOP button if present) 3
<b>Operating systems</b>				
Operating system	Windows CE	Windows CE	Windows CE	Windows CE
<b>Configuration</b>				
Configuration software				
• Configuration tool	see "Configuration overview" from page 2/3			



**Technical specifications** (continued)

<b>SIMATIC Mobile Panel 277</b>	<b>6AV6 645-0CA01-0AX0 8" with integrated acknowledgment button</b>	<b>6AV6 645-0CB01-0AX0 8" with integrated acknowledgment button and STOP button</b>	<b>6AV6 645-0CC01-0AX0 8" with integrated acknowledgment button, STOP button, handwheel, keyswitch and illuminated pushbutton</b>	<b>6AV6 645-0BE02-0AX0 10" with integrated acknowledgment button and STOP button</b>
<b>Functionality under WinCC flexible/WinCC (TIA portal)</b>				
Applications/options	see chapter 4: HMI software/SIMATIC WinCC flexible options and SIMATIC WinC (TIA portal) options			
Number of Visual Basic Scripts	50	50	50	50
Task planner	Yes	Yes	Yes	Yes
Help system	Yes	Yes	Yes	Yes
Status/control	with SIMATIC S7	with SIMATIC S7	with SIMATIC S7	with SIMATIC S7
With alarm logging system (incl. buffer and acknowledgment)				
• Number of messages	4 000	4 000	4 000	4 000
• Bit messages	Yes	Yes	Yes	Yes
• Analog messages	Yes	Yes	Yes	Yes
• Message buffer	Ring buffer (n x 512 entries), retentive, maintenance-free	Ring buffer (n x 512 entries), retentive, maintenance-free	Ring buffer (n x 512 entries), retentive, maintenance-free	Ring buffer (n x 512 entries), retentive, maintenance-free
Recipes				
• Recipes	300	300	300	300
• Data records per recipe	500	500	500	200
• Entries per data record	1000	1000	1000	1000
• Recipe memory	64 KB integrated Flash, expandable	64 KB integrated Flash, expandable	64 KB integrated Flash, expandable	64 KB integrated Flash, expandable
Number of process images				
• Process images	500	500	500	500
• Variables	2 048	2 048	2 048	2 048
• Limit values	Yes	Yes	Yes	Yes
• Multiplexing	Yes	Yes	Yes	Yes
Image elements				
• Text objects	10,000 text elements	10,000 text elements	10,000 text elements	10,000 text elements
• Graphic object	Bit maps, icons, vector graphics	Bit maps, icons, vector graphics	Bit maps, icons, vector graphics	Bit maps, icons, vector graphics
• dynamic objects	Diagrams, bar graphs, sliders, analog display, invisible buttons	Diagrams, bar graphs, sliders, analog display, invisible buttons	Diagrams, bar graphs, sliders, analog display, invisible buttons	Diagrams, bar graphs, sliders, analog display, invisible buttons
Lists				
• Text lists	500	500	500	500
• Graphic list	400	400	400	400
• Libraries	Yes	Yes	Yes	Yes
Archiving				
• Number of archives per project	20	20	20	20
• Number of measuring points per project	20	20	20	20
• Number of entries per archive	10 000	10 000	10 000	10 000
• Memory location	Multi Media Card	Multi Media Card	Multi Media Card	Multi Media Card
Security				
• Number of user groups	50	50	50	50
• Passwords exportable	Yes	Yes	Yes	Yes
• Number of user rights	32	32	32	32
Data carrier support				
• Multimedia Card	Yes	Yes	Yes	Yes

# Operator panels

## Mobile Panels - 270 series

### SIMATIC Mobile Panel 277

#### Technical specifications (continued)

<b>SIMATIC Mobile Panel 277</b>	<b>6AV6 645-0CA01-0AX0 8" with integrated acknowledgment button</b>	<b>6AV6 645-0CB01-0AX0 8" with integrated acknowledgment button and STOP button</b>	<b>6AV6 645-0CC01-0AX0 8" with integrated acknowledgment button, STOP button, handwheel, keyswitch and illuminated pushbutton</b>	<b>6AV6 645-0BE02-0AX0 10" with integrated acknowledgment button and STOP button</b>
Recording • Recording/Printing	Alarms, report (shift report), color print, hardcopy	Alarms, report (shift report), color print, hardcopy	Alarms, report (shift report), color print, hardcopy	Alarms, report (shift report), color print, hardcopy, PROFINET
Fonts • Keyboard fonts	US American (English)	US American (English)	US American (English)	US American (English)
Languages • Configuration languages	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H
• Character sets	Tahoma, Arial, Courier New, WinCC flexible Standard, symbol languages, all freely scalable	Tahoma, Arial, Courier New, WinCC flexible Standard, symbol languages, all freely scalable	Tahoma, Arial, Courier New, WinCC flexible Standard, symbol languages, all freely scalable	Tahoma, Arial, Courier New, WinCC flexible Standard, symbol languages, all freely scalable
Transfer (upload/download) • Transfer of configuration	MPI/PROFIBUS DP, USB, Ethernet, automatic transfer recognition	MPI/PROFIBUS DP, USB, Ethernet, automatic transfer recognition	MPI/PROFIBUS DP, USB, Ethernet, automatic transfer recognition	MPI/PROFIBUS DP, USB, Ethernet, automatic transfer recognition
Process coupling • Connection to controller	see "System interfaces" from page 2/178			
<b>I/O</b>				
I/O devices	Printer, barcode reader	Printer, barcode reader	Printer, barcode reader	Printer, barcode reader
<b>Mechanics/material</b>				
Type of housing (front)	Plastic	Plastic	Plastic	Plastic
<b>Dimensions and weight</b>				
Dimensions • Housing diameter/ depth (mm)	Dia 290 mm / D 103 mm	Dia 290 mm / D 103 mm	Dia 290 mm / D 103 mm	
Weight • Weight	1.7 kg	1.7 kg	1.7 kg	2.3 kg

# Operator panels

## Mobile Panels - 270 series

### SIMATIC Mobile Panel 277

2

Ordering data	Order No.	Order No.
<b>SIMATIC Mobile Panel 277 8" <sup>1)</sup></b> <ul style="list-style-type: none"> <li>• With integrated acknowledgement button</li> <li>• With integrated acknowledgement button and STOP pushbutton</li> <li>• With integrated acknowledgement button, STOP pushbutton, handwheel, key-operated switch and two illuminated pushbuttons</li> </ul>	E <b>6AV6 645-0CA01-0AX0</b> E <b>6AV6 645-0CB01-0AX0</b> E <b>6AV6 645-0CC01-0AX0</b>	<b>SIMATIC HMI Manual Collection B</b> <b>6AV6 691-1SA01-0AX0</b> Electronic documentation, on DVD 5 languages (English, French, German, Italian and Spanish); contains: all currently available user manuals, manuals and communication manuals for SIMATIC HMI
<b>SIMATIC Mobile Panel 277 10"</b> With integrated acknowledgement button and STOP pushbutton	E <b>6AV6 645-0BE02-0AX0</b>	<b>System components for Mobile Panels</b> <b>DP connection box for Mobile Panels (MPI/PROFIBUS)</b> • Basic <b>6AV6 671-5AE00-0AX0</b> • Plus <b>6AV6 671-5AE10-0AX0</b>
<b>Configuration</b> with SIMATIC WinCC flexible	see HMI software	<b>PN connection box for Mobile Panel (PROFINET)</b> • Basic <b>6AV6 671-5AE01-0AX0</b> • Plus <b>6AV6 671-5AE11-0AX0</b>
<b>Documentation (to be ordered separately)</b> <b>Operating Instructions for Mobile Panel 277</b> <ul style="list-style-type: none"> <li>• German</li> <li>• English</li> <li>• French</li> <li>• Italian</li> <li>• Spanish</li> </ul>	<b>6AV6 691-1DL01-0AA0</b> <b>6AV6 691-1DL01-0AB0</b> <b>6AV6 691-1DL01-0AC0</b> <b>6AV6 691-1DL01-0AD0</b> <b>6AV6 691-1DL01-0AE0</b>	<b>DP connecting cable (MPI/PROFIBUS)</b> <b>Standard cables</b> 2 m <b>6XV1 440-4AH20</b> 5 m <b>6XV1 440-4AH50</b> 10 m <b>6XV1 440-4AN10</b> 15 m <b>6XV1 440-4AN15</b> 25 m <b>6XV1 440-4AN25</b>
<b>User Manual WinCC flexible Compact/Standard/Advanced</b> <ul style="list-style-type: none"> <li>• German</li> <li>• English</li> <li>• French</li> <li>• Italian</li> <li>• Spanish</li> </ul>	<b>6AV6 691-1AB01-3AA0</b> <b>6AV6 691-1AB01-3AB0</b> <b>6AV6 691-1AB01-3AC0</b> <b>6AV6 691-1AB01-3AD0</b> <b>6AV6 691-1AB01-3AE0</b>	<b>Intermediate lengths <sup>2)</sup></b> 8 m <b>6XV1 440-4AH80</b> 20 m <b>6XV1 440-4AN20</b>
<b>WinCC flexible Communication User Manual</b> <ul style="list-style-type: none"> <li>• German</li> <li>• English</li> <li>• French</li> <li>• Italian</li> <li>• Spanish</li> </ul>	<b>6AV6 691-1CA01-3AA0</b> <b>6AV6 691-1CA01-3AB0</b> <b>6AV6 691-1CA01-3AC0</b> <b>6AV6 691-1CA01-3AD0</b> <b>6AV6 691-1CA01-3AE0</b>	<b>PN connecting cable (PROFINET)</b> <b>Standard cables</b> 2 m <b>6XV1 440-4BH20</b> 5 m <b>6XV1 440-4BH50</b> 8 m <b>6XV1 440-4BH80</b> 10 m <b>6XV1 440-4BN10</b> 15 m <b>6XV1 440-4BN15</b> 20 m <b>6XV1 440-4BN20</b> 25 m <b>6XV1 440-4BN25</b>
		<b>Accessories for Mobile Panels</b> see HMI accessories

B: Subject to export regulations: AL: N and ECCN: EAR99S

E: Subject to export regulations: AL: 91999 and ECCN: 5D002ENCU

<sup>1)</sup> The system components (connecting cables and connection boxes) must be ordered separately.<sup>2)</sup> Delivery time approximately 6 weeks

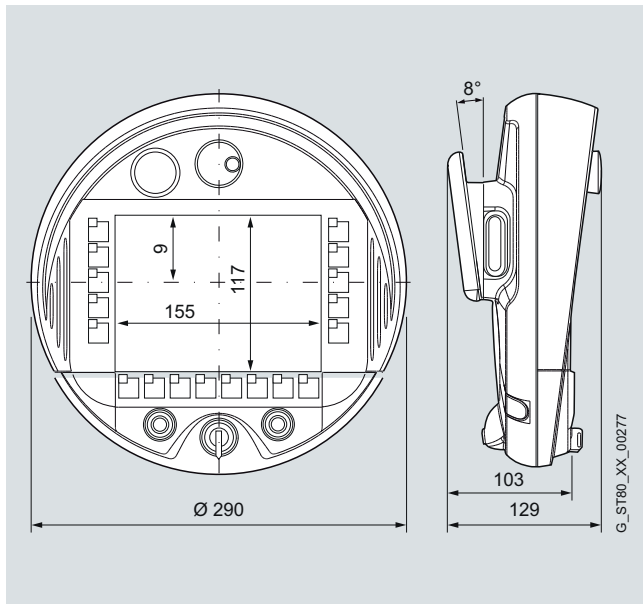
# Operator panels

## Mobile Panels - 270 series

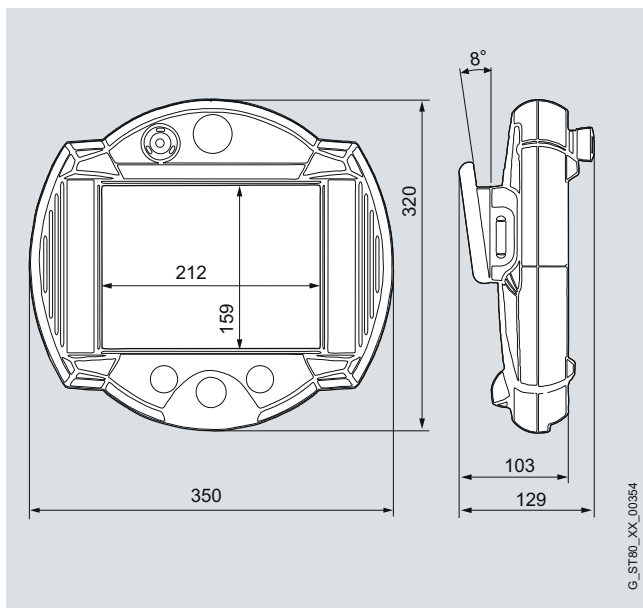
### SIMATIC Mobile Panel 277

#### Dimensional drawings

All specifications in mm. Panel cutout see technical specifications.



Mobile Panel 277 8" – front and side view



Mobile Panel 277 10" – front and side view

#### More information

Additional information is available on the Internet at:

[www.siemens.com/simatic-mobile-panels](http://www.siemens.com/simatic-mobile-panels)

#### Note:

Do you require a specific modification or extension to the products described here? Under "Customized products", you can find information about additional and generally available products for the sector, and about the possibilities for customized modification and adaptation.

# Operator panels

## Mobile Panels – 270 series

### SIMATIC Mobile Panel 277(F) IWLAN

#### Overview



#### Function

- Input/output fields for displaying and changing of process values.
- Function keys are used for directly triggering functions and actions. Up to 16 functions can be configured simultaneously on function keys. The function keys can also be used directly as PROFINET IO. The function keys can also be reconfigured as system keys. A frequently used function such as "Acknowledge alarm" can thus be assigned to a function key.
- Auxiliary operator controls such as handwheels, key switches and illuminated pushbuttons can be assigned with a variable or as a direct actuation via PROFINET IO (direct keys).
- Buttons are used for direct triggering of functions and actions. Up to 16 functions can be configured simultaneously on buttons.
- Graphics can be used as symbols instead of text for "labeling" function keys or buttons. They can also be used as full-screen background images. In the configuration software, a comprehensive library is available containing graphics and a wide variety of objects. All editors with an OLE interface can be used as graphic editors (such as PaintShop, Designer or CorelDraw).
- Vector graphics; simple geometric basic forms (e. g. lines, circles and rectangles) can be created directly in the configuration software.
- Text fields for labeling function keys, process displays, and process values in any font size.
- Trend views and bars are used for the graphic display of dynamic values.
- Display selection from the controller permits operator prompting from the controller.
- Presentation of HTML documents with MS Pocket Internet Explorer.
- Visual Basic Script, flexibility thanks to the implementation of new functions including linking to variables (comparison operations, loops, etc.).
- Language switching 16 online languages, 32 configuration languages incl. Asiatic and Cyrillic character sets
  - Language-dependent texts and graphics
- User administration (security)
  - User-oriented access protection according to requirements of specific sectors
  - Authentication with user name and password
  - User-group-specific rights
- Signaling system
  - Discrete and analog alarms (edge alarms) as well as the ALARM\_S message frame procedure for SIMATIC S7
  - Freely definable message classes (e. g. status/fault messages) for definition of acknowledgment response and display of alarm events
- Message buffer
  - Non-volatile, maintenance-free and battery-free message buffer. The messages remain stored when the mobile panel has the battery removed as well
- Recipe management
  - With additional data storage (on optional MultiMedia Card/SD Card)
  - Online/offline processing on the panel
  - Storage of recipe data in standard Windows format (CSV)
  - External processing using standard tools such as Excel and Access is possible
- Help texts for process images, messages and variables.
- Arithmetic functions
- Limit value monitoring for reliable process control of inputs and outputs.
- Indicator light for machine and plant status indication.
- Scheduler for cyclic function processing.
- Dynamic positioning of objects and dynamic showing/hiding of objects
- Permanent window and template concept
  - Creation of screen templates:
- Simple maintenance and configuration thanks to:
  - Backup/restore of the project, operating system, recipe data records and firmware on the optional standard multi-media card/SD card
  - Backup and restoration of configuration, operating system, recipe data sets and firmware on a PC using ProSave
  - Project transfer/return transfer via PROFINET/IWLAN
  - Automatic transfer detection
  - Individual brightness setting
  - Project simulation directly on the configuration computer
- WinCC flexible options
  - Sm@rtService for remote operator control and monitoring of SIMATIC HMI systems based on TCP/IP networks
  - Sm@rtAccess for communication between HMI systems based on TCP/IP networks. Remote access to recipe data records, passwords and HMI system-specific information, and much more. (Mobile Panel 277F IWLAN as server: View only)
  - OPC server: Communication with applications (e. g. MES, ERP, or applications in the office sector) from various manufacturers (see HMI software/runtime software SIMATIC WinCC flexible/WinCC flexible RT options)
  - Audit

# Operator panels

## Mobile Panels – 270 series

### SIMATIC Mobile Panel 277(F) IWLAN

#### Function (continued)

##### Configuration

Configuration is carried out with the SIMATIC WinCC flexible Standard or Advanced configuration software (see SIMATIC WinCC flexible HMI software/engineering software). SIMATIC WinCC flexible is the logical further development of the field-proven ProTool family. Projects generated using ProTool can be easily migrated to WinCC. If WinCC flexible is started directly from SIMATIC Manager, data in STEP 7 can be accessed directly when the panel is configured. Duplicated data input and data management is, therefore, avoided.

##### IWLAN infrastructure

The required IWLAN infrastructure is set up with the IWLAN Access Points SCALANCE W-780, preferably with the version SCALANCE W786-2RR, which fully supports all possible applications of the Mobile Panel 277(F) IWLAN. For operating a plant without fail-safe communication, the version SCALANCE W786-1PRO can also be used. The iPCF functionality (rapid roaming = fast, uninterrupted switchover between several access points) is only available with V2 panels upwards.

The Access Point provides an Industrial Ethernet interface for connection to the wired network.

In addition to a reliable radio link, the SCALANCE W-780 Access Points stand out due to their optimum support of standardized IT mechanisms:

- IEEE 802.11b/ g/ a/ h for different frequency ranges
- IEEE 802.11e for multimedia, wireless multimedia (WMM) <sup>1)</sup>
- IEEE 802.11i for security <sup>1)</sup>
- Construction of redundant networks with the Rapid Spanning Tree Protocol (RSTP)
- Virtual networks (VLAN) to logically separate, for example, different user groups
- Sending the log entries of the SCALANCE W devices to a Syslog server

<sup>1)</sup> Not supported by Mobile Panel Wireless



### Integration

The SIMATIC Mobile Panel 277(F) IWLAN communicates via the WLAN Standard IEEE 802.11 a(b/g) via PROFINET. The Mobile Panel 277F IWLAN devices also support PROFI-safe communication.

There are five device versions with V2:

For mobile operation and monitoring via WLAN:

- Mobile Panel 277 IWLAN V2
- Mobile Panel 277 IWLAN V2 with handwheel, key switch and illuminated pushbuttons

As fail-safe device for safety-oriented operation as well:

- Mobile Panel 277F IWLAN V2 with acknowledgement button and emergency stop button
- Mobile Panel 277F IWLAN V2 with acknowledgement button, emergency stop button, handwheel, key switch and illuminated pushbuttons
- Mobile Panel 277F IWLAN RFID Tag (for V2 only)

For the versions Mobile Panel 277F IWLAN (PROFI-safe), the following system prerequisites apply:

- The Mobile Panel must be connected as a safe device (PROFI-safe, Distributed Safety)
- Use of a SIMATIC F-CPU

The Mobile Panel 277(F) IWLAN can be connected to:

- SIMATIC S7-200/-300/-400 (one F-CPU required for integrating the Mobile Panel 277F IWLAN and SIMOTION (Mobile Panel 277 IWLAN V2 or higher, or Mobile Panel 277FI WLAN V2 or higher (WinCC flexible 2008 SP3 or higher))

#### Note:

Further information can be found under "System interfaces". The function manuals "Fail-Safe Operation of the Mobile Panel 277F IWLAN" are available for downloading in English, German, and Japanese.

<http://support.automation.siemens.com/WW/view/en/31255853>

SIMATIC Mobile Panel		5 GHz frequency band (IEEE 802.11a)	SIMATIC F-CPU (Distributed Safety)
<b>277 IWLAN</b>	Only WLAN utilization (HMI)	x	-
	When using transponders	!	-
	When using Profinet IO	x	-
<b>277F IWLAN</b> (fail-safe)	-	- !	- !
<b>277F IWLAN (RFID Tag)</b> (fail-safe)		x	!

X = Recommended

! = Requirement

- = Not required

# Operator panels

## Mobile Panels – 270 series

### SIMATIC Mobile Panel 277(F) IWLAN

#### Technical specifications

	6AV6 645-0DD01-0AX1	6AV6 645-0DE01-0AX1	6AV6 645-0EB01-0AX1	6AV6 645-0EC01-0AX1	6AV6 645-0EF01-0AX1
<b>Display</b>					
Size	7.5"	7.5"	7.5"	7.5"	7.5"
Display type	TFT, 65536 colors	TFT, 65536 colors	TFT, 65536 colors	TFT, 65536 colors	TFT, 65536 colors
Resolution (pixels)					
• Resolution (WxH in pixel)	640 x 480	640 x 480	640 x 480	640 x 480	640 x 480
Backlighting					
• MTBF backlighting (at 25 °C)	about 50,000 hours	about 50,000 hours	about 50,000 hours	about 50,000 hours	about 50,000 hours
<b>Control elements</b>					
Operating options	Keys and Touch	Keys and Touch	Keys and Touch	Keys and Touch	Keys and Touch
Function keys, programmable	18 function keys, 18 with LEDs	18 function keys, 18 with LEDs	18 function keys, 18 with LEDs	18 function keys, 18 with LEDs	18 function keys, 18 with LEDs
Connection for mouse/keyboard/barcode reader	USB / USB / USB	USB / USB / USB	USB / USB / USB	USB / USB / USB	USB / USB / USB
Keyboard					
• Numeric/alphabetical input	Yes / Yes	Yes / Yes	Yes / Yes	Yes / Yes	Yes / Yes
Touch operation					
• Touch screen	analog, resistive	analog, resistive	analog, resistive	analog, resistive	analog, resistive
Special operator controls					
• Emergency stop button			2-channel, positive latching	2-channel, positive latching	2-channel, positive latching
• Acknowledgement button			2-channel, number of positions: 3	2-channel, number of positions: 3	2-channel, number of positions: 3
• Key-operated switch		Yes, 3 switch settings		Yes, 3 switch settings	Yes, 3 switch settings
• Illuminated pushbutton		Yes		Yes	Yes
• Handwheel		Yes		Yes	Yes
<b>Expansions for operator control of the process</b>					
DP direct LEDs (LEDs as S7 output I/O)	F1...F18	F1...F18	F1...F18	F1...F18	F1...F18
DP direct keys (screen buttons and keys as S7 input I/O)	F1...F18, Number of bytes for configurable buttons: 10	F1...F18, Number of bytes for configurable buttons: 10	F1...F18, Number of bytes for configurable buttons: 10	F1...F18, Number of bytes for configurable buttons: 10	F1...F18, Number of bytes for configurable buttons: 10
<b>Supply voltage</b>					
Via charging station	Yes	Yes	Yes	Yes	Yes
Via table power supply	Yes	Yes	Yes	Yes	Yes
Input voltage					
• Supply voltage	DC	DC	DC	DC	DC
<b>Main battery</b>					
Rated voltage	7.2 V	7.2 V	7.2 V	7.2 V	7.2 V
Capacity	5 100 mA·h	5 100 mA·h	5 100 mA·h	5 100 mA·h	5 100 mA·h
Number of loading cycles, min	500	500	500	500	500
Charging time, typ.	4 h	4 h	4 h	4 h	4 h
Operating time, typ.	4 h	4 h	4 h	4 h	4 h
Display for battery capacity	Yes	Yes	Yes	Yes	Yes
Energy-saving mode	Yes	Yes	Yes	Yes	Yes
Battery exchange in operation	Yes	Yes	Yes	Yes	Yes



# Operator panels

## Mobile Panels – 270 series

### SIMATIC Mobile Panel 277(F) IWLAN

#### Technical specifications (continued)

	6AV6 645-0DD01-0AX1	6AV6 645-0DE01-0AX1	6AV6 645-0EB01-0AX1	6AV6 645-0EC01-0AX1	6AV6 645-0EF01-0AX1
<b>Processor</b>					
Processor	ARM, 520 MHz	ARM, 520 MHz	ARM, 520 MHz	ARM, 520 MHz	ARM, 520 MHz
<b>Memory</b>					
Type	Flash / RAM	Flash / RAM	Flash / RAM	Flash / RAM	Flash / RAM
Usable memory for user data	6 MB usable memory for user data	6 MB usable memory for user data	6 MB usable memory for user data	6 MB usable memory for user data	6 MB usable memory for user data
<b>Type of output</b>					
Status LEDs	Yes	Yes	Yes	Yes	Yes
• LED for safe			Yes	Yes	Yes
• LED for communication	Yes	Yes	Yes	Yes	Yes
• LED for battery	Yes	Yes	Yes	Yes	Yes
Vibrations	Yes	Yes	Yes	Yes	Yes
<b>Time of day</b>					
Clock					
• Type	Hardware clock, battery backup, synchronizable	Hardware clock, battery backup, synchronizable	Hardware clock, battery backup, synchronizable	Hardware clock, battery backup, synchronizable	Hardware clock, battery backup, synchronizable
<b>Interfaces</b>					
Interfaces	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)
USB port	1 x USB	1 x USB	1 x USB	1 x USB	1 x USB
Multi Media Card slot	1 MMC/SD card slot	1 MMC/SD card slot	1 MMC/SD card slot	1 MMC/SD card slot	1 MMC/SD card slot
Industrial Ethernet					
• Industrial Ethernet interface	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)
Wireless LAN					
• Supports standards	Yes according to IEEE 802.11a	Yes according to IEEE 802.11a	Yes according to IEEE 802.11a	Yes according to IEEE 802.11a	Yes according to IEEE 802.11a
• Supported channels (according to IEEE 802.11a)	Channel 34, channel 36, channel 38, channel 40, channel 42, channel 44, channel 46, channel 48, channel 52, channel 56, channel 60, channel 64, channel 149, channel 153, channel 157, channel 161	Channel 34, channel 36, channel 38, channel 40, channel 42, channel 44, channel 46, channel 48, channel 52, channel 56, channel 60, channel 64, channel 149, channel 153, channel 157, channel 161	Channel 34, channel 36, channel 38, channel 40, channel 42, channel 44, channel 46, channel 48, channel 52, channel 56, channel 60, channel 64, channel 149, channel 153, channel 157, channel 161	Channel 34, channel 36, channel 38, channel 40, channel 42, channel 44, channel 46, channel 48, channel 52, channel 56, channel 60, channel 64, channel 149, channel 153, channel 157, channel 161	Channel 34, channel 36, channel 38, channel 40, channel 42, channel 44, channel 46, channel 48, channel 52, channel 56, channel 60, channel 64, channel 149, channel 153, channel 157, channel 161
• Supported channels (according to IEEE 802.11b and IEEE 802.1g)	Channels 1 to 11, channel 12, channel 13, channel 14	Channels 1 to 11, channel 12, channel 13, channel 14	Channels 1 to 11, channel 12, channel 13, channel 14	Channels 1 to 11, channel 12, channel 13, channel 14	Channels 1 to 11, channel 12, channel 13, channel 14
• Country approval (radio)	Australia, Austria, Belgium, Bulgaria, Canada, China, Cyprus, Denmark, Estonia, Finland, France, Germany, UK, Greece, Hungary, Ireland, Iceland, Italy, Japan, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Rumania, Sweden, Switzerland, Slovakia, Slovenia, Spain, South Korea, South Africa, Taiwan, Czech Republic, Turkey	Australia, Austria, Belgium, Bulgaria, Canada, China, Cyprus, Denmark, Estonia, Finland, France, Germany, UK, Greece, Hungary, Ireland, Iceland, Italy, Japan, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Rumania, Sweden, Switzerland, Slovakia, Slovenia, Spain, South Korea, South Africa, Taiwan, Czech Republic, Turkey	Australia, Austria, Belgium, Bulgaria, Canada, China, Cyprus, Denmark, Estonia, Finland, France, Germany, UK, Greece, Hungary, Ireland, Iceland, Italy, Japan, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Rumania, Sweden, Switzerland, Slovakia, Slovenia, Spain, South Korea, South Africa, Taiwan, Czech Republic, Turkey	Australia, Austria, Belgium, Bulgaria, Canada, China, Cyprus, Denmark, Estonia, Finland, France, Germany, UK, Greece, Hungary, Ireland, Iceland, Italy, Japan, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Rumania, Sweden, Switzerland, Slovakia, Slovenia, Spain, South Korea, South Africa, Taiwan, Czech Republic, Turkey	Australia, Austria, Belgium, Bulgaria, Canada, China, Cyprus, Denmark, Estonia, Finland, France, Germany, UK, Greece, Hungary, Ireland, Iceland, Italy, Japan, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Rumania, Sweden, Switzerland, Slovakia, Slovenia, Spain, South Korea, South Africa, Taiwan, Czech Republic, Turkey
• Encryption	WEP, WPA	WEP, WPA	WEP, WPA	WEP, WPA	WEP, WPA
• Supports rapid roaming	Yes	Yes	Yes	Yes	Yes

# Operator panels

## Mobile Panels – 270 series

### SIMATIC Mobile Panel 277(F) IWLAN

#### Technical specifications (continued)

	6AV6 645-0DD01-0AX1	6AV6 645-0DE01-0AX1	6AV6 645-0EB01-0AX1	6AV6 645-0EC01-0AX1	6AV6 645-0EF01-0AX1
<b>Protocols</b>					
PROFINET	Yes	Yes	Yes	Yes	Yes
PROFINET IO	Yes	Yes	Yes	Yes	Yes
PROFIsafe			Yes	Yes	Yes
<b>EMC</b>					
Emission of radio interference acc. to EN 55 011					
• Emission of radio interferences acc. to EN 55 011 (limit class A)	Yes; The product is designed for use in industrial environments. When used in residential areas, the emission of radio interference according to limit class B of EN 55011 must be ensured. For further information refer to the user documentation	Yes; The product is designed for use in industrial environments. When used in residential areas, the emission of radio interference according to limit class B of EN 55011 must be ensured. For further information refer to the user documentation	Yes; The product is designed for use in industrial environments. When used in residential areas, the emission of radio interference according to limit class B of EN 55011 must be ensured. For further information refer to the user documentation	Yes; The product is designed for use in industrial environments. When used in residential areas, the emission of radio interference according to limit class B of EN 55011 must be ensured. For further information refer to the user documentation	Yes; The product is designed for use in industrial environments. When used in residential areas, the emission of radio interference according to limit class B of EN 55011 must be ensured. For further information refer to the user documentation
<b>Ambient conditions</b>					
Operating temperature					
• Operation	0 °C to +40 °C	0 °C to +40 °C	0 °C to +40 °C	0 °C to +40 °C	0 °C to +40 °C
Storage/transport temperature					
• Transport, storage	-20 °C to +60 °C	-20 °C to +60 °C	-20 °C to +60 °C	-20 °C to +60 °C	-20 °C to +60 °C
Relative humidity					
• max. relative humidity	80 %	80 %	80 %	80 %	80 %
Drop height	1.2 m	1.2 m	1.2 m	1.2 m	1.2 m
<b>Degree and class of protection</b>					
IP65 housing	Yes	Yes	Yes	Yes	Yes
<b>Standards, approvals, certificates</b>					
Certifications	CE, cULus, C-TICK	CE, cULus, C-TICK	CE, cULus, C-TICK	CE, cULus, C-TICK	CE, cULus, C-TICK
TÜV safety certification			Yes	Yes	Yes
Safety Integrity Level to IEC 61508			3	3	3
Performance level acc. to EN ISO 13849-1			E	E	E
Safety category according to EN954-1			Safety category according to EN954-1 (enabling button, STOP button if present) 4	Safety category according to EN954-1 (enabling button, STOP button if present) 4	Safety category according to EN954-1 (enabling button, STOP button if present) 4
<b>Operating systems</b>					
Operating system	Windows CE	Windows CE	Windows CE	Windows CE	Windows CE
<b>Configuration</b>					
Configuration software					
• Configuration tool	see "Configuration overview" from page 2/3				

# Operator panels

## Mobile Panels – 270 series

### SIMATIC Mobile Panel 277(F) IWLAN

#### Technical specifications (continued)

	6AV6 645-0DD01-0AX1	6AV6 645-0DE01-0AX1	6AV6 645-0EB01-0AX1	6AV6 645-0EC01-0AX1	6AV6 645-0EF01-0AX1
<b>Functionality under WinCC flexible/WinCC (TIA portal)</b>					
Applications/options	see chapter 4: HMI software/SIMATIC WinCC flexible options and SIMATIC WinCC (TIA portal) options				
Number of Visual Basic Scripts	50	50	50	50	50
Task planner	Yes	Yes	Yes	Yes	Yes
Help system	Yes	Yes	Yes	Yes	Yes
Status/control	with SIMATIC S7	with SIMATIC S7	with SIMATIC S7	with SIMATIC S7	with SIMATIC S7
With alarm logging system (incl. buffer and acknowledgment)					
• Number of messages	4 000	4 000	4 000	4 000	4 000
• Bit messages	Yes	Yes	Yes	Yes	Yes
• Analog messages	Yes	Yes	Yes	Yes	Yes
• Message buffer	Ring buffer (n x 512 entries), retentive, maintenance-free	Ring buffer (n x 512 entries), retentive, maintenance-free	Ring buffer (n x 512 entries), retentive, maintenance-free	Ring buffer (n x 512 entries), retentive, maintenance-free	Ring buffer (n x 512 entries), retentive, maintenance-free
Recipes					
• Recipes	300	300	300	300	300
• Data records per recipe	500	500	500	500	500
• Entries per data record	1000	1000	1000	1000	1000
• Recipe memory	64 KB integrated Flash, expandable	64 KB integrated Flash, expandable	64 KB integrated Flash, expandable	64 KB integrated Flash, expandable	64 KB integrated Flash, expandable
Number of process images					
• Process images	500	500	500	500	500
• Variables	2 048	2 048	2 048	2 048	2 048
• Limit values	Yes	Yes	Yes	Yes	Yes
• Multiplexing	Yes	Yes	Yes	Yes	Yes
Image elements					
• Text objects	10,000 text elements	10,000 text elements	10,000 text elements	10,000 text elements	10,000 text elements
• Graphic object	Bit maps, icons, vector graphics	Bit maps, icons, vector graphics	Bit maps, icons, vector graphics	Bit maps, icons, vector graphics	Bit maps, icons, vector graphics
• dynamic objects	Diagrams, bar graphs, sliders, analog display, invisible buttons	Diagrams, bar graphs, sliders, analog display, invisible buttons	Diagrams, bar graphs, sliders, analog display, invisible buttons	Diagrams, bar graphs, sliders, analog display, invisible buttons	Diagrams, bar graphs, sliders, analog display, invisible buttons
Lists					
• Text lists	500	500	500	500	500
• Graphic list	400	400	400	400	400
• Libraries	Yes	Yes	Yes	Yes	Yes
Archiving					
• Number of archives per project	20	20	20	20	20
• Number of measuring points per project	20	20	20	20	20
• Number of entries per archive	10 000	10 000	10 000	10 000	10 000
• Memory location	Multi Media Card	Multi Media Card	Multi Media Card	Multi Media Card	Multi Media Card
Security					
• Number of user groups	50	50	50	50	50
• Passwords exportable	Yes	Yes	Yes	Yes	Yes
• Number of user rights	32	32	32	32	32
Data carrier support					
• Multimedia Card	Yes	Yes	Yes	Yes	Yes
Recording					
• Recording/Printing	Alarms, report (shift report), PROFINET	Alarms, report (shift report), PROFINET	Alarms, report (shift report), PROFINET	Alarms, report (shift report), PROFINET	Alarms, report (shift report), PROFINET

# Operator panels

## Mobile Panels – 270 series

### SIMATIC Mobile Panel 277(F) IWLAN

#### Technical specifications (continued)

	6AV6 645-0DD01-0AX1	6AV6 645-0DE01-0AX1	6AV6 645-0EB01-0AX1	6AV6 645-0EC01-0AX1	6AV6 645-0EF01-0AX1
<b>Languages</b> • Configuration languages  • Character sets	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H Tahoma, Arial, Courier New, WinCC flexible Standard, symbol languages, all freely scalable	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H Tahoma, Arial, Courier New, WinCC flexible Standard, symbol languages, all freely scalable	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H Tahoma, Arial, Courier New, WinCC flexible Standard, symbol languages, all freely scalable	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H Tahoma, Arial, Courier New, WinCC flexible Standard, symbol languages, all freely scalable	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H Tahoma, Arial, Courier New, WinCC flexible Standard, symbol languages, all freely scalable
<b>Transfer (upload/download)</b> • Transfer of configuration  • Wireless LAN	USB, Ethernet, automatic transfer recognition Yes	USB, Ethernet, automatic transfer recognition Yes	USB, Ethernet, automatic transfer recognition Yes	USB, Ethernet, automatic transfer recognition Yes	USB, Ethernet, automatic transfer recognition Yes
<b>Process coupling</b> • Connection to controller • Zones - Number of zones per project, max. - Number of transponders for zones per project, max. • Effective range - Number of effective ranges per project, max. - Number of transponders for effective ranges per project, max. • Transponder - Number of transponders per project, max. - Adjustable distance range - Adjustable distance, min. - Adjustable distance, min.	see "System interfaces" from page 2/178  Yes 254  255  Yes 127  127  Yes 256  Yes 2 m 8 m				
<b>I/O</b> I/O devices	Barcode reader	Barcode reader	Barcode reader	Barcode reader	Barcode reader
<b>Mechanics/material</b> Type of housing (front)	Plastic	Plastic	Plastic	Plastic	Plastic
<b>Dimensions and weight</b> Dimensions • Housing diameter/depth (mm)	Dia 290 mm / D 103 mm	Dia 290 mm / D 103 mm	Dia 290 mm / D 103 mm	Dia 290 mm / D 103 mm	Dia 290 mm / D 103 mm
<b>Weight</b> • Weight	2.2 kg	2.2 kg	2.2 kg	2.2 kg	2.2 kg

# Operator panels

## Mobile Panels – 270 series

### SIMATIC Mobile Panel 277(F) IWLAN

#### Technical specifications (continued)

	6AV6 645-0FD01-0AX1	6AV6 645-0FE01-0AX1	6AV6 645-0GB01-0AX1	6AV6 645-0GC01-0AX1	6AV6 645-0GF01-0AX1
<b>Display</b>					
Size	7.5"	7.5"	7.5"	7.5"	7.5"
Display type	TFT, 65536 colors	TFT, 65536 colors	TFT, 65536 colors	TFT, 65536 colors	TFT, 65536 colors
Resolution (pixels) • Resolution (WxH in pixel)	640 x 480	640 x 480	640 x 480	640 x 480	640 x 480
Backlighting • MTBF backlighting (at 25 °C)	about 50,000 hours	about 50,000 hours	about 50,000 hours	about 50,000 hours	about 50,000 hours
<b>Control elements</b>					
Operating options	Keys and Touch	Keys and Touch	Keys and Touch	Keys and Touch	Keys and Touch
Function keys, programmable	18 function keys, 18 with LEDs	18 function keys, 18 with LEDs	18 function keys, 18 with LEDs	18 function keys, 18 with LEDs	18 function keys, 18 with LEDs
Connection for mouse/keyboard/barcode reader	USB / USB / USB	USB / USB / USB	USB / USB / USB	USB / USB / USB	USB / USB / USB
Keyboard • Numeric/alphabetical input	Yes / Yes	Yes / Yes	Yes / Yes	Yes / Yes	Yes / Yes
Touch operation • Touch screen	analog, resistive	analog, resistive	analog, resistive	analog, resistive	analog, resistive
Special operator controls • Emergency stop button • Acknowledgement button • Key-operated switch • Illuminated pushbutton • Handwheel		Yes, 3 switch settings Yes Yes	2-channel, positive latching 2-channel, number of positions: 3	2-channel, positive latching 2-channel, number of positions: 3 Yes, 3 switch settings Yes Yes	2-channel, positive latching 2-channel, number of positions: 3 Yes, 3 switch settings Yes Yes
<b>Expansions for operator control of the process</b>					
DP direct LEDs (LEDs as S7 output I/O)	F1...F18	F1...F18	F1...F18	F1...F18	F1...F18
DP direct keys (screen buttons and keys as S7 input I/O)	F1...F18, Number of bytes for configurable buttons: 10	F1...F18, Number of bytes for configurable buttons: 10	F1...F18, Number of bytes for configurable buttons: 10	F1...F18, Number of bytes for configurable buttons: 10	F1...F18, Number of bytes for configurable buttons: 10
<b>Supply voltage</b>					
Via charging station	Yes	Yes	Yes	Yes	Yes
Via table power supply	Yes	Yes	Yes	Yes	Yes
Input voltage • Supply voltage	DC	DC	DC	DC	DC
<b>Main battery</b>					
Rated voltage	7.2 V	7.2 V	7.2 V	7.2 V	7.2 V
Capacity	5 100 mA·h	5 100 mA·h	5 100 mA·h	5 100 mA·h	5 100 mA·h
Number of loading cycles, min	500	500	500	500	500
Charging time, typ.	4 h	4 h	4 h	4 h	4 h
Operating time, typ.	4 h	4 h	4 h	4 h	4 h
Display for battery capacity	Yes	Yes	Yes	Yes	Yes
Energy-saving mode	Yes	Yes	Yes	Yes	Yes
Battery exchange in operation	Yes	Yes	Yes	Yes	Yes

# Operator panels

## Mobile Panels – 270 series

### SIMATIC Mobile Panel 277(F) IWLAN

#### Technical specifications (continued)

	6AV6 645-0FD01-0AX1	6AV6 645-0FE01-0AX1	6AV6 645-0GB01-0AX1	6AV6 645-0GC01-0AX1	6AV6 645-0GF01-0AX1
<b>Processor</b>					
Processor	ARM, 520 MHz	ARM, 520 MHz	ARM, 520 MHz	ARM, 520 MHz	ARM, 520 MHz
<b>Memory</b>					
Type	Flash / RAM	Flash / RAM	Flash / RAM	Flash / RAM	Flash / RAM
Usable memory for user data	6 MB usable memory for user data	6 MB usable memory for user data	6 MB usable memory for user data	6 MB usable memory for user data	6 MB usable memory for user data
<b>Type of output</b>					
Status LEDs	Yes	Yes	Yes	Yes	Yes
• LED for safe			Yes	Yes	Yes
• LED for communication	Yes	Yes	Yes	Yes	Yes
• LED for battery	Yes	Yes	Yes	Yes	Yes
Vibrations	Yes	Yes	Yes	Yes	Yes
<b>Time of day</b>					
Clock					
• Type	Hardware clock, battery backup, synchronizable	Hardware clock, battery backup, synchronizable	Hardware clock, battery backup, synchronizable	Hardware clock, battery backup, synchronizable	Hardware clock, battery backup, synchronizable
<b>Interfaces</b>					
Interfaces	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)
USB port	1 x USB	1 x USB	1 x USB	1 x USB	1 x USB
Multi Media Card slot	1 MMC/SD card slot	1 MMC/SD card slot	1 MMC/SD card slot	1 MMC/SD card slot	1 MMC/SD card slot
Industrial Ethernet					
• Industrial Ethernet interface	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)
Wireless LAN					
• Supports standards	Yes according to IEEE 802.11a	Yes according to IEEE 802.11a	Yes according to IEEE 802.11a	Yes according to IEEE 802.11a	Yes according to IEEE 802.11a
• Supported channels (according to IEEE 802.11a)	Channel 34, channel 36, channel 38, channel 40, channel 42, channel 44, channel 46, channel 48, channel 52, channel 56, channel 60, channel 64, channel 149, channel 153, channel 157, channel 161	Channel 34, channel 36, channel 38, channel 40, channel 42, channel 44, channel 46, channel 48, channel 52, channel 56, channel 60, channel 64, channel 149, channel 153, channel 157, channel 161	Channel 34, channel 36, channel 38, channel 40, channel 42, channel 44, channel 46, channel 48, channel 52, channel 56, channel 60, channel 64, channel 149, channel 153, channel 157, channel 161	Channel 34, channel 36, channel 38, channel 40, channel 42, channel 44, channel 46, channel 48, channel 52, channel 56, channel 60, channel 64, channel 149, channel 153, channel 157, channel 161	Channel 34, channel 36, channel 38, channel 40, channel 42, channel 44, channel 46, channel 48, channel 52, channel 56, channel 60, channel 64, channel 149, channel 153, channel 157, channel 161
• Supported channels (according to IEEE 802.11b and IEEE 802.1g)	Channels 1 to 11, channel 12, channel 13, channel 14	Channels 1 to 11, channel 12, channel 13, channel 14	Channels 1 to 11, channel 12, channel 13, channel 14	Channels 1 to 11, channel 12, channel 13, channel 14	Channels 1 to 11, channel 12, channel 13, channel 14
• Country approval (radio)	USA, Canada	USA, Canada	USA, Canada	USA, Canada	USA, Canada
• Encryption	WEP, WPA	WEP, WPA	WEP, WPA	WEP, WPA	WEP, WPA
• Supports rapid roaming	Yes	Yes	Yes	Yes	Yes

# Operator panels

## Mobile Panels – 270 series

### SIMATIC Mobile Panel 277(F) IWLAN

#### Technical specifications (continued)

	6AV6 645-0FD01-0AX1	6AV6 645-0FE01-0AX1	6AV6 645-0GB01-0AX1	6AV6 645-0GC01-0AX1	6AV6 645-0GF01-0AX1
<b>Protocols</b>					
PROFINET	Yes	Yes	Yes	Yes	Yes
PROFINET IO	Yes	Yes	Yes	Yes	Yes
PROFIsafe			Yes	Yes	Yes
<b>EMC</b>					
Emission of radio interference acc. to EN 55 011					
• Emission of radio interferences acc. to EN 55 011 (limit class A)	Yes; The product is designed for use in industrial environments. When used in residential areas, the emission of radio interference according to limit class B of EN 55011 must be ensured. For further information refer to the user documentation	Yes; The product is designed for use in industrial environments. When used in residential areas, the emission of radio interference according to limit class B of EN 55011 must be ensured. For further information refer to the user documentation	Yes; The product is designed for use in industrial environments. When used in residential areas, the emission of radio interference according to limit class B of EN 55011 must be ensured. For further information refer to the user documentation	Yes; The product is designed for use in industrial environments. When used in residential areas, the emission of radio interference according to limit class B of EN 55011 must be ensured. For further information refer to the user documentation	Yes; The product is designed for use in industrial environments. When used in residential areas, the emission of radio interference according to limit class B of EN 55011 must be ensured. For further information refer to the user documentation
<b>Ambient conditions</b>					
Operating temperature					
• Operation	0 °C to +40 °C	0 °C to +40 °C	0 °C to +40 °C	0 °C to +40 °C	0 °C to +40 °C
Storage/transport temperature					
• Transport, storage	-20 °C to +60 °C	-20 °C to +60 °C	-20 °C to +60 °C	-20 °C to +60 °C	-20 °C to +60 °C
Relative humidity					
• max. relative humidity	80 %	80 %	80 %	80 %	80 %
Drop height	1.2 m	1.2 m	1.2 m	1.2 m	1.2 m
<b>Degree and class of protection</b>					
IP65 housing	Yes	Yes	Yes	Yes	Yes
<b>Standards, approvals, certificates</b>					
Certifications	CE, cULus, C-TICK	CE, cULus, C-TICK	CE, cULus, C-TICK	CE, cULus, C-TICK	CE, cULus, C-TICK
TÜV safety certification			Yes	Yes	Yes
Safety Integrity Level to IEC 61508			3	3	3
Performance level acc. to EN ISO 13849-1			E	E	E
Safety category according to EN954-1			Safety category according to EN954-1 (enabling button, STOP button if present) 4	Safety category according to EN954-1 (enabling button, STOP button if present) 4	Safety category according to EN954-1 (enabling button, STOP button if present) 4
<b>Operating systems</b>					
Operating system	Windows CE	Windows CE	Windows CE	Windows CE	Windows CE
<b>Configuration</b>					
Configuration software					
• Configuration tool	see "Configuration overview" from page 2/3				



# Operator panels

## Mobile Panels – 270 series

### SIMATIC Mobile Panel 277(F) IWLAN

#### Technical specifications (continued)

	6AV6 645-0FD01-0AX1	6AV6 645-0FE01-0AX1	6AV6 645-0GB01-0AX1	6AV6 645-0GC01-0AX1	6AV6 645-0GF01-0AX1
<b>Functionality under WinCC flexible/WinCC (TIA Portal)</b>					
Applications/options	see chapter 4: HMI software/SIMATIC WinCC flexible options and SIMATIC WinCC (TIA portal) options				
Number of Visual Basic Scripts	50	50	50	50	50
Task planner	Yes	Yes	Yes	Yes	Yes
Help system	Yes	Yes	Yes	Yes	Yes
Status/control	with SIMATIC S7	with SIMATIC S7	with SIMATIC S7	with SIMATIC S7	with SIMATIC S7
With alarm logging system (incl. buffer and acknowledgment)					
• Number of messages	4 000	4 000	4 000	4 000	4 000
• Bit messages	Yes	Yes	Yes	Yes	Yes
• Analog messages	Yes	Yes	Yes	Yes	Yes
• Message buffer	Ring buffer (n x 512 entries), retentive, maintenance-free	Ring buffer (n x 512 entries), retentive, maintenance-free	Ring buffer (n x 512 entries), retentive, maintenance-free	Ring buffer (n x 512 entries), retentive, maintenance-free	Ring buffer (n x 512 entries), retentive, maintenance-free
Recipes					
• Recipes	300	300	300	300	300
• Data records per recipe	500	500	500	500	500
• Entries per data record	1000	1000	1000	1000	1000
• Recipe memory	64 KB integrated Flash, expandable	64 KB integrated Flash, expandable	64 KB integrated Flash, expandable	64 KB integrated Flash, expandable	64 KB integrated Flash, expandable
Number of process images					
• Process images	500	500	500	500	500
• Variables	2 048	2 048	2 048	2 048	2 048
• Limit values	Yes	Yes	Yes	Yes	Yes
• Multiplexing	Yes	Yes	Yes	Yes	Yes
Image elements					
• Text objects	10,000 text elements	10,000 text elements	10,000 text elements	10,000 text elements	10,000 text elements
• Graphic object	Bit maps, icons, vector graphics	Bit maps, icons, vector graphics	Bit maps, icons, vector graphics	Bit maps, icons, vector graphics	Bit maps, icons, vector graphics
• dynamic objects	Diagrams, bar graphs, sliders, analog display, invisible buttons	Diagrams, bar graphs, sliders, analog display, invisible buttons	Diagrams, bar graphs, sliders, analog display, invisible buttons	Diagrams, bar graphs, sliders, analog display, invisible buttons	Diagrams, bar graphs, sliders, analog display, invisible buttons
Lists					
• Text lists	500	500	500	500	500
• Graphic list	400	400	400	400	400
• Libraries	Yes	Yes	Yes	Yes	Yes
Archiving					
• Number of archives per project	20	20	20	20	20
• Number of measuring points per project	20	20	20	20	20
• Number of entries per archive	10 000	10 000	10 000	10 000	10 000
• Memory location	Multi Media Card	Multi Media Card	Multi Media Card	Multi Media Card	Multi Media Card
Security					
• Number of user groups	50	50	50	50	50
• Passwords exportable	Yes	Yes	Yes	Yes	Yes
• Number of user rights	32	32	32	32	32
Data carrier support					
• Multimedia Card	Yes	Yes	Yes	Yes	Yes
Recording					
• Recording/Printing	Alarms, report (shift report), PROFINET	Alarms, report (shift report), PROFINET	Alarms, report (shift report), PROFINET	Alarms, report (shift report), PROFINET	Alarms, report (shift report), PROFINET



# Operator panels

## Mobile Panels – 270 series

### SIMATIC Mobile Panel 277(F) IWLAN

#### Technical specifications (continued)

	6AV6 645-0FD01-0AX1	6AV6 645-0FE01-0AX1	6AV6 645-0GB01-0AX1	6AV6 645-0GC01-0AX1	6AV6 645-0GF01-0AX1
Languages	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H
• Configuration languages					
• Character sets	Tahoma, Arial, Courier New, WinCC flexible Standard, symbol languages, all freely scalable	Tahoma, Arial, Courier New, WinCC flexible Standard, symbol languages, all freely scalable	Tahoma, Arial, Courier New, WinCC flexible Standard, symbol languages, all freely scalable	Tahoma, Arial, Courier New, WinCC flexible Standard, symbol languages, all freely scalable	Tahoma, Arial, Courier New, WinCC flexible Standard, symbol languages, all freely scalable
Transfer (upload/download)					
• Transfer of configuration	USB, Ethernet, automatic transfer recognition	USB, Ethernet, automatic transfer recognition	USB, Ethernet, automatic transfer recognition	USB, Ethernet, automatic transfer recognition	USB, Ethernet, automatic transfer recognition
• Wireless LAN	Yes	Yes	Yes	Yes	Yes
Process coupling	see "System interfaces" from page 2/178				
• Connection to controller					
• Zones	Yes	Yes	Yes	Yes	
- Number of zones per project, max.	254	254	254	254	
- Number of transponders for zones per project, max.	255	255	255	255	
• Effective range			Yes	Yes	Yes
- Number of effective ranges per project, max.			127	127	127
- Number of transponders for effective ranges per project, max.			127	127	
• Transponder	Yes	Yes	Yes	Yes	
- Number of transponders per project, max.	256	256	256	256	
- Adjustable distance range	Yes	Yes	Yes	Yes	
- Adjustable distance, min.	2 m	2 m	2 m	2 m	
- Adjustable distance, min.	8 m	8 m	8 m	8 m	
I/O					
I/O devices	Barcode reader	Barcode reader	Barcode reader	Barcode reader	Barcode reader
<b>Mechanics/material</b>					
Type of housing (front)	Plastic	Plastic	Plastic	Plastic	Plastic
<b>Dimensions and weight</b>					
Dimensions					
• Housing diameter/depth (mm)	Dia 290 mm / D 103 mm	Dia 290 mm / D 103 mm	Dia 290 mm / D 103 mm	Dia 290 mm / D 103 mm	Dia 290 mm / D 103 mm
Weight					
• Weight	2.2 kg	2.2 kg	2.2 kg	2.2 kg	2.2 kg

# Operator panels

## Mobile Panels – 270 series

### SIMATIC Mobile Panel 277(F) IWLAN

2

Ordering data	Order No.	Order No.
<b>SIMATIC Mobile Panel 277 IWLAN V2 (RoW version)</b> <ul style="list-style-type: none"> <li>• Communication via WLAN (PROFINET) E</li> <li>• Communication via WLAN (PROFINET) with integrated handwheel, key-operated switch and two illuminated pushbuttons E</li> </ul>	<b>6AV6 645-0DD01-0AX1</b>  <b>6AV6 645-0DE01-0AX1</b>	<b>Accessories</b>  Note: Please order the table-top power supply or charging station as well. Required for charging the battery  • Table-top power supply incl. power cable for EU, US, UK, JP (only suitable for operation under laboratory/office conditions) A  • Charger V2 for safe storage and charging of device incl. lock for securing the device in the charger. Charging capabilities for up to two additional batteries A  • Additional battery with LED indicator for indicating the charge status  • Transponder V2 incl. batteries (3x AA)  • Transponder V1 incl. batteries (3x AA) (mandatory for operation in plants with Mobile Panels 277(F) IWLAN V1)  • Service pack V2 for Mobile Panel 277(F) IWLAN V2 contains accessories pack for Mobile Panel 277 (labeling strip cover), battery compartment cover (device), cover left/right (charger), power supply connector counterpart (charger), replacement key (charger) A  • Service pack V1 for Mobile Panel 277(F) IWLAN V2 contains accessories pack for Mobile Panel 277 (labeling strip cover), battery compartment cover (device), cover left/right (charger), power supply connector counterpart (charger), replacement key (charger)
<b>SIMATIC Mobile Panel 277F IWLAN V2 PROFIsafe (RoW version)</b> <ul style="list-style-type: none"> <li>• Communication via WLAN (PROFINET) with acknowledgement button and emergency stop button E</li> <li>• Communication via WLAN (PROFINET) with acknowledgement button and emergency stop button with integrated handwheel, key-operated switch, and two illuminated pushbuttons E</li> <li>• RFID tag version: Communication via WLAN (PROFINET) with acknowledgement button and emergency stop button with integrated handwheel, key-operated switch, and two illuminated pushbuttons E</li> </ul>	<b>6AV6 645-0EB01-0AX1</b>  <b>6AV6 645-0EC01-0AX1</b>  <b>6AV6 645-0EF01-0AX1</b>	<b>6AV6 671-5CN00-0AX2</b>  <b>6AV6 671-5CE00-0AX1</b>  <b>6AV6 671-5CL00-0AX0</b>  <b>6AV6 671-5CM00-0AX1</b>  <b>6AV6 671-5CM00-0AX0</b>  <b>6AV6 671-5CA00-0AX2</b>  <b>6AV6 671-5CA00-0AX1</b>
<b>SIMATIC Mobile Panel 277 IWLAN V2 (USA version)</b> <ul style="list-style-type: none"> <li>• Communication via WLAN (PROFINET) E</li> <li>• Communication via WLAN (PROFINET) with integrated handwheel, key-operated switch and two illuminated pushbuttons E</li> </ul>	<b>6AV6 645-0FD01-0AX1</b>  <b>6AV6 645-0FE01-0AX1</b>	
<b>SIMATIC Mobile Panel 277F IWLAN V2 PROFIsafe (USA version)</b> <ul style="list-style-type: none"> <li>• with acknowledgement button and emergency stop button E</li> <li>• with acknowledgement button and emergency stop button with integrated handwheel, key-operated switch, and two illuminated pushbuttons E</li> <li>• with acknowledgement button and emergency stop button with integrated handwheel, key-operated switch, and two illuminated pushbuttons (tag version) E</li> </ul>	<b>6AV6 645-0GB01-0AX1</b>  <b>6AV6 645-0GC01-0AX1</b>  <b>6AV6 645-0GF01-0AX1</b>	
<b>Starter kit SIMATIC Mobile Panel 277(F) IWLAN (RoW version)</b>  for <ul style="list-style-type: none"> <li>• Mobile Panel 277 IWLAN V2 E</li> <li>• Mobile Panel 277F IWLAN V2 E</li> </ul>	<b>6AV6 651-5GA01-0AA1</b> <b>6AV6 651-5HA01-0AA1</b>	<b>SCALANCE W-786 Access Points for SIMATIC Mobile Panel 277(F) IWLAN</b> <ul style="list-style-type: none"> <li>• IWLAN Access Points with integrated radio interfaces; radio networks; IEEE 802.11b/g/a/h at 2.4/5 GHz up to 54 Mbit/s. National approvals; WPA2/AES; Power over Ethernet (PoE), degree of protection IP65 (-40 °C to +70 °C); scope of delivery: Mounting hardware, 48 V DC terminal block; manual on CD-ROM; German/English;</li> </ul>

A: Subject to export regulations; AL: N and ECCN: EAR99H

E: Subject to export regulations; AL: 91999 and ECCN: 5D002ENCU

# Operator panels

## Mobile Panels – 270 series

### SIMATIC Mobile Panel 277(F) IWLAN

2

Ordering data	Order No.		Order No.
<b>SCALANCE W-786-2RR</b>  IWLAN Dual Access Point with two integrated radio interface for setting up radio links with iPCF; RJ45 connection  Four internal antennas • National approvals for operation H outside the U.S. • National approvals for operation H within the U.S.	<b>6GK5 786-2BA60-6AA0</b>  <b>6GK5 786-2BA60-6AB0</b>	<b>PS791-2DC power supply</b> • 24 V DC power supply for installation in SCALANCE W-786 products; operating instructions in German/English	<b>6GK5 791-2DC00-0AA0</b>
<b>SCALANCE W-786-1PRO</b>  IWLAN Access Points with built-in wireless interface RJ45 connection  Two internal antennas • National approvals for operation H outside the U.S. • National approvals for operation H within the U.S.	<b>6GK5 786-1BA60-2AA0</b>  <b>6GK5 786-1BA60-2AB0</b>	<b>PS791-2AC power supply</b> • 110 V AC to 230 V AC power supply for installation in SCALANCE W-786 products; operating instructions in German/English	<b>6GK5 791-2AC00-0AA0</b>
<b>Further IWLAN Access Point versions:</b>  <b>SCALANCE W-784 Access Points</b>  IWLAN Access Points with integrated radio interfaces (see Catalog IK PI), radio networks IEEE 802.11b/g/a/h at 2.4/5 GHz up to 54 Mbit/s. National approvals; WPA2/AES; Power over Ethernet (PoE), degree of protection IP30 (-20 °C to +60 °C); scope of delivery: Mounting hardware, 24 V DC terminal block; manual on CD-ROM; German/English;	<b>6GK5 784-1AA30-...</b>  (see Catalog IK PI)	<b>Other compatible accessories:</b> • Wall mounting bracket for Mobile Panels • Memory card multi-media card/SD card • Mobile Panel 277 cover membrane • Key labeling strips for Mobile Panel 277 • Spare key for Mobile Panels	see HMI accessories  see HMI accessories  see HMI accessories  see HMI accessories  see HMI accessories
<b>SCALANCE W-786 Access Points</b>  IWLAN Access Points with integrated radio interfaces (see Catalog IK PI); radio networks IEEE 802.11b/g/a/h at 2.4/5 GHz up to 54 Mbit/s. National approvals; WPA2/AES; Power over Ethernet (PoE), degree of protection IP65 (-40 °C to +70 °C); scope of delivery: Mounting hardware, 48 V DC terminal block; manual on CD-ROM; German/English;	<b>6GK5 786-...</b>  (see Catalog IK PI)	<b>Configuration</b> with SIMATIC WinCC flexible	see HMI software
<b>SCALANCE W-788 Access Points</b>  IWLAN Access Points with integrated radio interfaces (see Catalog IK PI); radio networks IEEE 802.11b/g/a/h at 2.4/5 GHz up to 54 Mbit/s. National approvals; WPA2/AES; Power over Ethernet (PoE), degree of protection IP65 (-20 °C to +60 °C); scope of delivery: 2 ANT795-4MR antennas, IP67 hybrid plug-in connector, mounting hardware, manual on CD-ROM, German/English	<b>6GK5 788-...</b>  (see Catalog IK PI)	<b>Documentation (to be ordered separately)</b>  <b>Mobile Panel 277F IWLAN V2 Operating Instructions</b> • German • English • French • Italian • Spanish	<b>6AV6 691-1DQ01-2AA1</b> <b>6AV6 691-1DQ01-2AB1</b> <b>6AV6 691-1DQ01-2AC1</b> <b>6AV6 691-1DQ01-2AD1</b> <b>6AV6 691-1DQ01-2AE1</b>
		<b>Mobile Panel 277 IWLAN V2 Operating Instructions</b> • German • English • French • Italian • Spanish	<b>6AV6 691-1DM01-2AA1</b> <b>6AV6 691-1DM01-2AB1</b> <b>6AV6 691-1DM01-2AC1</b> <b>6AV6 691-1DM01-2AD1</b> <b>6AV6 691-1DM01-2AE1</b>
		<b>User Manual WinCC flexible Compact/Standard/Advanced</b> • German • English • French • Italian • Spanish	<b>6AV6 691-1AB01-3AA0</b> <b>6AV6 691-1AB01-3AB0</b> <b>6AV6 691-1AB01-3AC0</b> <b>6AV6 691-1AB01-3AD0</b> <b>6AV6 691-1AB01-3AE0</b>
		<b>WinCC flexible Communication User Manual</b> • German • English • French • Italian • Spanish	<b>6AV6 691-1CA01-3AA0</b> <b>6AV6 691-1CA01-3AB0</b> <b>6AV6 691-1CA01-3AC0</b> <b>6AV6 691-1CA01-3AD0</b> <b>6AV6 691-1CA01-3AE0</b>
		<b>Accessories</b>	see HMI accessories

H: Subject to export regulations: AL: 91999 and ECCN: EAR99H

The function manuals "Fail-Safe Operation of the Mobile Panel 277F IWLAN V1" are available for downloading in English, German and Japanese.

<http://support.automation.siemens.com/WW/view/en/31255853>

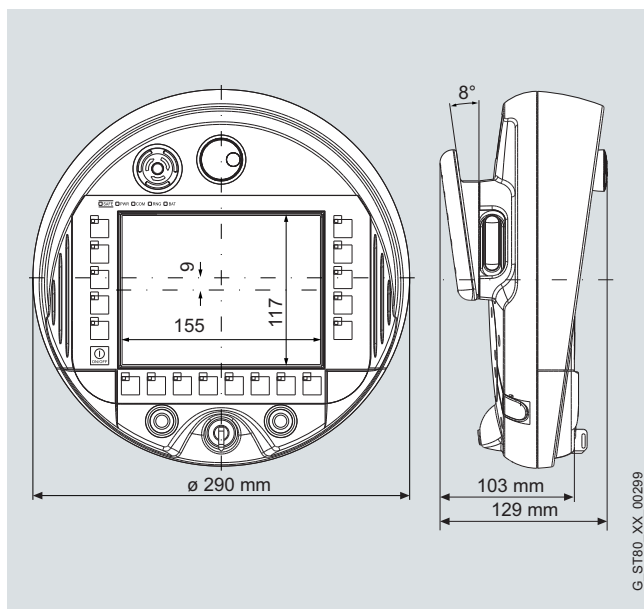
# Operator panels

## Mobile Panels – 270 series

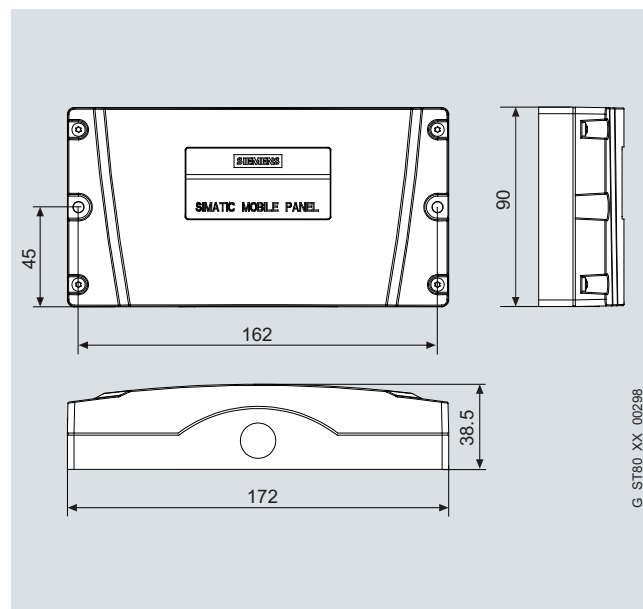
### SIMATIC Mobile Panel 277(F) IWLAN

#### Dimensional drawings

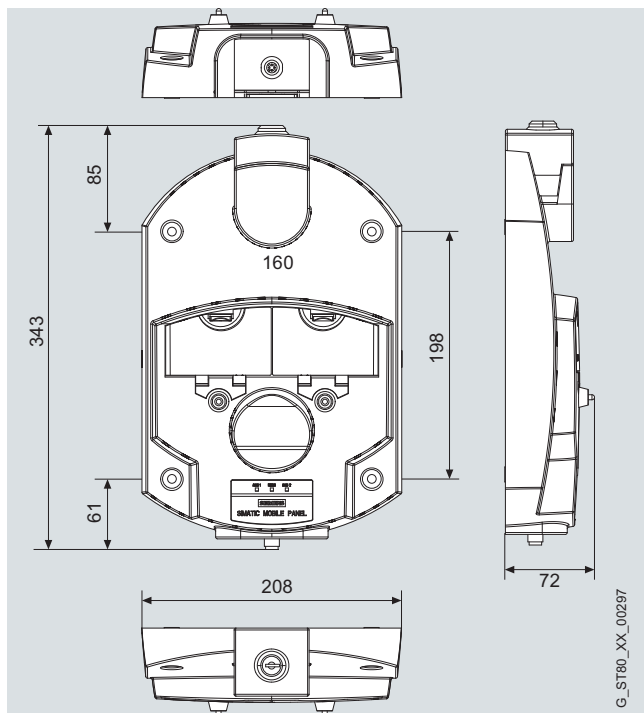
All specifications in mm. Panel cutout see technical specifications.



Mobile Panel 277(F) IWLAN – Front and side view



Transponder dimensional drawing



Charger dimensional drawing

#### More information

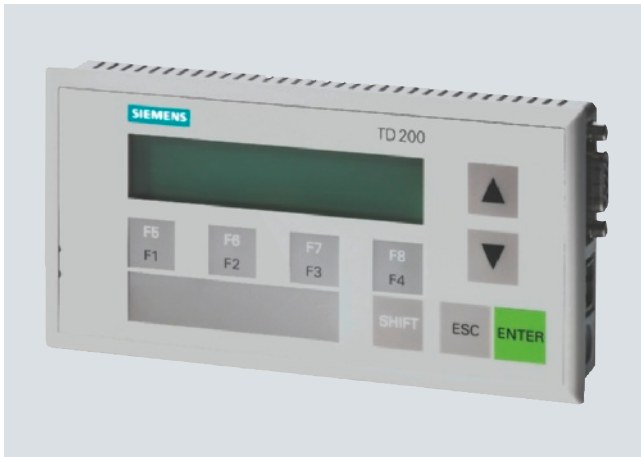
Additional information is available on the Internet at:

[www.siemens.com/simatic-mobile-panels](http://www.siemens.com/simatic-mobile-panels)

#### Note:

Do you require a specific modification or extension to the products described here? Under "Customized products", you can find information about additional and generally available products for the sector, and about the possibilities for customized modification and adaptation.

### Overview



- The user-friendly text display for the S7-200
- For control and monitoring:  
Message text display, intervention in PLC program, setting of inputs and outputs
- Direct connection to CPU interface using supplied cable or incorporation into network (also via EM 277)
- No separate power supply required
- No separate parameterization software required
- Addressing and setting of contrast in supplied menu

### Application

The TD 200 Text Display is the optimum solution for all operator control and monitoring tasks of SIMATIC S7-200.

It supports:

- display of message texts
- interventions in the control program, e.g. modification of setpoints
- setting of inputs and outputs, e.g. for switching a motor on and off

### Design

The TD 200 is simply connected to the PPI interface of the S7-200 using the supplied connecting cable. A separate power supply is not required. It is also possible to connect several TD 200 units to one S7-200.

The TD 200 features:

- Rugged plastics housing with degree of protection IP65 (front):  
Increased watertightness due to absence of slots for labeling strips
- Mounting depth 27 mm:  
The TD 200 can be mounted without additional accessories in control cabinets or operator panels, or used as a handheld unit
- Backlit LC display;  
readable even under unfavorable lighting
- Ergonomically designed input keys,  
below which are programmable function keys
- Integrated interface for connection of cable
- Connection for optional power supply:  
A power supply unit is required if the distance between the TD 200 and S7-200 is more than 2.5 m. PROFIBUS cables are then available instead of the connection cable
- Customized labeling strips:  
The back of the housing has to be removed to mount the labeling strips. This must therefore be performed before the unit is installed

# Operator panels

## Micro Panels

### Text Display TD 200

#### Function

The TD 200 permits:

- Display of message texts:  
Up to 80 message texts (alarms) with max. 6 variables display current operating states and can be optionally parameterized to require acknowledgment and can be additionally protected by a password. Also up to 64 static alarms with up to 6 variables can be configured. System texts are stored in English, German, French, Spanish and Italian in the unit. Various character sets can be selected, and messages can be additionally saved in the simplified Chinese character set
- Display and modification of process parameters:  
Process parameters are output on the display, and can be modified using the input keys, e.g. for temperature settings or modifications to speed
- Setting of inputs and outputs:  
A memory bit is assigned to each of the 8 programmable function keys. These can then be set during operation, e.g. during commissioning, testing and diagnostics. It is then possible e.g. to control motors without having to install additional control elements in the system
- Additional functions and features:  
E.g. processing of floating-point numbers, symbols for bar graph display, various data blocks for operation of several TD 200 displays on one CPU, password protection for integrated SETUP menu and modified variables
- Activation of TD 200 editing mode by PLC:  
Variables embedded in messages can be edited directly without having to press the Enter key or to place the cursor at the variable
- Setting a PLC bit:
  - Set bit:  
When a function key is pressed, a bit is set in the PLC. This must be reset by the user program
  - Momentary:  
A bit is set when pressing a function key, and deleted again when the key is released
- New character set (Greek, Latin2, Turkish) to support further foreign languages

#### Programming

The configuration data of the TD 200 are saved in the CPU of the S7-200. The message text strings and configuration parameters are created with the STEP 7 Micro/WIN configuration software of V4 and higher. Additional parameterization software is not required.

Special data areas are reserved in the CPU of the S7-200 for data exchange with the TD 200. The TD 200 directly accesses the respectively required functions of the CPU via these data areas. A separate TD 200 wizard in STEP 7 Micro/WIN V4 and higher supports user-friendly parameter assignment.

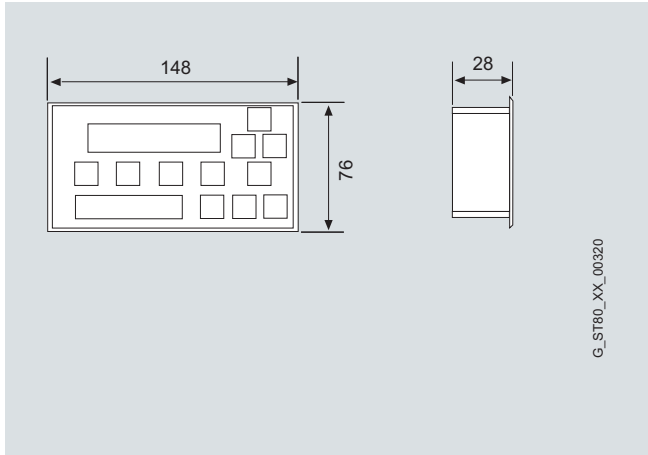
#### Technical specifications

Product type designation	6ES7 272-0AA30-0YA1 Text Display TD 200
<b>Operator control and monitoring</b>	
Operating	
• Number of lines	2
• Number of characters per line	20; Characters/line: ASCII, cyrillic; 10 characters/line: Chinese
• Character size	5 mm
Design of display	LCD backlight
Input voltage	
• Rated value (DC)	24 V; Power supplied over the S7-200 communications interface or optional external power supply unit; the CPU sensor power supply (24 V DC) is not subjected to load
<b>Input current</b>	
Rated value at 24 V DC	120 mA
• Transmission speed (PPI), max.	187.5 kbit/s
<b>1st interface</b>	
Physics	RS 485
Functionality	
• PPI	Yes
PPI	
• Number of nodes, max.	126; S7-200, OP, TP, TBP, PG/PC
Operating temperature	
• Min.	0 °C
• max.	60 °C
Storage/transport temperature	
• Min.	-40 °C
• max.	70 °C
<b>Degree and class of protection</b>	
IP65	Yes; at front
<b>Dimensions and weight</b>	
Dimensions	
• Width	148 mm
• Height	76 mm
• Depth	27 mm
• Mounting cutout, width	138 mm
• Mounting cutout, height	68 mm
• Cabinet/switchboard strength	0.3 mm; 0.3 to 4 mm
Weight	
• Weight, approx.	250 g

Ordering data	Order No.
<b>Text Display TD 200</b> for connection to SIMATIC S7-200; can be used with STEP 7-Micro/WIN V3.2 SP4 or higher, incl. connecting cable	<b>6ES7 272-0AA30-0YA1</b>
<b>Connecting cables</b> For connecting TD 100C or TD 200C to S7-200	<b>6ES7 901-3EB10-0XA0</b>
<i>Accessories</i>	see HMI Accessories

Dimensional drawings

All specifications in mm.



TD200: Installation cutout (W x H) in mm: 138 x 68

More information

Additional information is available on the Internet at:

[www.siemens.com/simatic-micropanel](http://www.siemens.com/simatic-micropanel)

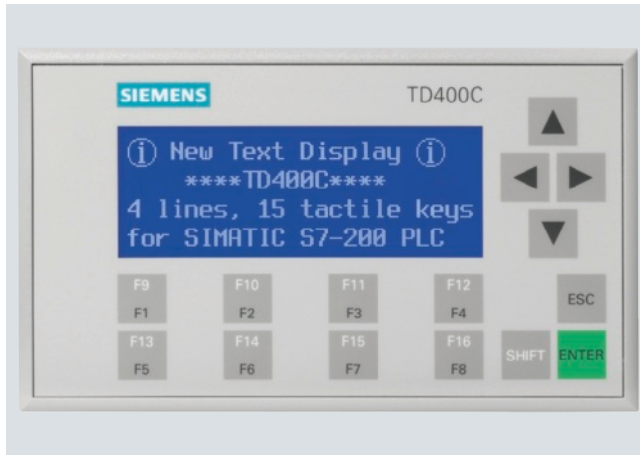


# Operator panels

## Micro Panels

### Text Display TD 400C

#### Overview



- More screen space and extremely good readability thanks to backlit four-line display
- Customizable operator interface with 15 tactile keys
- Acoustic and visual feedback from key operation
- Optimal support of the S7-200:
  - Direct connection to the S7-200 interface via supplied cable
  - No separate power supply required
  - Parameterization with STEP 7-Micro/WIN V4 SP6

#### Application

The TD 400C Text Display is the optimal solution for all operator control and monitoring tasks of the SIMATIC S7-200. The customizable operator interface enables optimal adaptation of the device to the surroundings in which it is used.

It enables:

- Display of message texts
- Intervention in the control program, e.g. setpoint changes
- Setting of inputs and outputs, e.g. for switching a motor on and off

Compatibility with the TD 100C, TD 200 and TD 200C Text Displays:

The TD 400C Text Display is not compatible with existing Text Displays (different mounting dimensions, configuration cannot be adopted).

#### Design

The TD 400C is connected to the S7-200 using the supplied connecting cable. A separate power supply is not required. It is also possible to connect several TD 400Cs to one S7-200.

The TD 400C has the following:

- 3.7" STN LCD backlit display:  
Up to 4 text lines can be configured
- Rugged plastic housing in degree of protection IP65 (on front), IP20 (on rear):  
Increased waterproofing because there are no slots for labeling strips
- Installation depth of 31 mm:  
The TD 400C can be installed in control cabinets or used as a handheld device without any other accessories
- Customizable operator interface:  
The design (colors, pictures, text, etc.) of the operator interface can be individually designed. Configuration is carried out with the Keypad Designer (component part of STEP 7-Micro/WIN)
- Configuration of tactile keys:  
Up to 15 permanently positioned, tactile keys can be assigned numerous functions (e.g. direction keys, messages, Set PLC bit)
- Connection for optional power supply:  
A power supply is required at a distance of more than 2.5 m between the TD 400C and S7-200. PROFIBUS bus cables are then available in place of the supplied connecting cable



### Function

- Display of message texts:

Up to 80 message texts (alarms) with up to 6 variables display current operating states and can be optionally parameterized as requiring acknowledgement and additionally protected by a password. In addition, up to 64 static messages, also with up to 6 variables, can be configured. Message texts can be displayed in two lines or four lines depending on the character size set. Four lines with 12 Chinese characters or 24 ASCII characters per line. Two lines with 8 Chinese characters or 16 ASCII characters per line.

- Display and modification of process parameters:  
Process parameters are shown on the display and can be modified using the input keys, e.g. for setting temperatures or changing speeds.
- Setting inputs and outputs:  
A memory bit is assigned to each of the programmable function keys. These bits can then be set during operation, e.g. at startup, and during test and diagnostics. In this way, motors can be controlled, for example, without having to install additional operator elements in the system.
- Additional functions and features:  
For example, processing of floating-point numbers, different data blocks for operating several TDs on one CPU, password protection for integrated SETUP menu, and modifiable variables.
- Activation of the TD 400C editing mode by the PLC:  
Variables embedded in messages can be edited direct without pressing the Enter key and moving the cursor to the variable.
- Setting a PLC bit:
  - Set bit:  
When a function key is pressed, a bit is set in the PLC. This must be reset again via the user program.
  - Momentary:  
When a function key is pressed, a bit is set, and when the key is released, the bit is deleted.
- New character set (Greek, Latin2, Turkish) for supporting further languages
- Programming of the S7-200 memory submodule
- Selecting the operating mode of the CPU (RUN/STOP)
- Editing of the V memory area

### Programming

The configuration data of the TD 400C is stored in the CPU of the S7-200. The message texts and the configuration parameters are created with the STEP 7-Micro/WIN V4 SP6 programming software. Additional parameterization software is not required. The operating front design is configured with the Keypad Designer (component part of STEP 7-Micro/WIN V4 SP6).

Special data areas are reserved in the CPU of the S7-200 for data exchange with the TD 400C. The TD 400C accesses each of the required functions of the CPU direct via these data areas. User-friendly parameterization takes place via a dedicated TD 400 Wizard in STEP 7-Micro/WIN V4 SP6.

### Technical specifications

Product type designation		6AV6 640-0AA00-0AX1 Text Display TD 400C
<b>Display</b>		
Size		3.7"
Display type		STN, black/white
Resolution (pixels)		
• Resolution (WxH in pixel)		192 x 64
Backlighting		
• MTBF backlighting (at 25 °C)		about 20,000 hours
<b>Control elements</b>		
Control elements		Membrane keyboard
Function keys, programmable		15 function keys
Membrane keyboard		Yes
<b>Supply voltage</b>		
Input voltage		
• permissible range		DC
• Supply voltage		24 V DC
<b>Memory</b>		
Usable memory for user data		No info
<b>Interfaces</b>		
Interfaces		1 x RS485 (max. 187.5 Mbit/s)
<b>Ambient conditions</b>		
Operating temperature		
• Operation		0 °C to +50 °C
Storage/transport temperature		
• Transport, storage		-20 °C to +60 °C
<b>Degree and class of protection</b>		
Front		IP65, NEMA 4, NEMA 4x, NEMA 12 (when installed)
Rear		IP20
<b>Standards, approvals, certificates</b>		
Certifications		CE, FM Class I Div. 2, UL, C-TICK, NEMA 4, NEMA 4x, NEMA 12
<b>Configuration</b>		
Configuration software		
• Configuration tool		see "Configuration overview" from page 2/3
<b>Functionality under WinCC flexible/WinCC (TIA Portal)</b>		
Security		
• Number of user groups		1
<b>Dimensions and weight</b>		
Weight		
• Weight		0.33 kg

# Operator panels

## Micro Panels

### Text Display TD 400C

#### Ordering data

**TD 400C Text Display** A **6AV6 640-0AA00-0AX1**

with customized operator interface on the device front; for connecting to SIMATIC S7-200; can be used from STEP 7-Micro/WIN V4 SP6, incl. connecting cable

**Promotion package** B **6ES7 298-1AA20-0YA3**

Consisting of:

- TD 400C
- SIMATIC S7-200
- SIMATIC STEP 7 Micro/WIN V4.0
- Simulator module
- Memory module
- PPI cable
- CD-ROM with documentation
- TANOS Box

**Connecting cables** **6ES7 901-3EB10-0XA0**

for connecting TD 100C/TD 200C or TD 400C to S7-200

**Blank foils** **6AV6 671-0AP00-0AX0**

for printing customized keyboard layouts;  
2 perforated films per sheet;  
10 sheets per pack

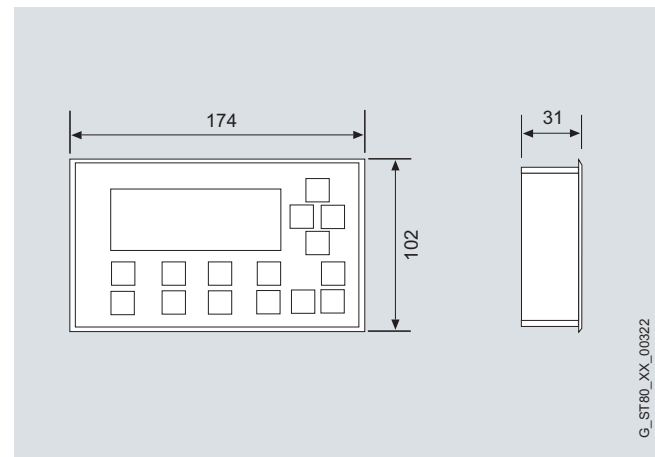
**Accessories** see HMI Accessories

A: Subject to export regulations: AL: N and ECCN: EAR99H

B: Subject to export regulations: AL: N and ECCN: EAR99S

#### Dimensional drawings

All specifications in mm.



TD400C: Installation cutout (W x H) in mm: 163.5 x 93.5

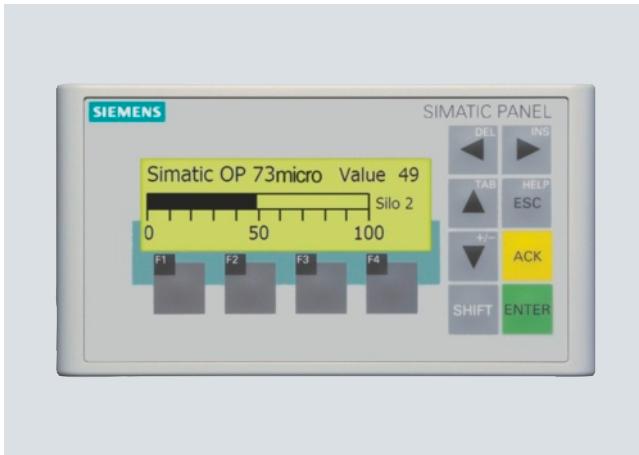
#### More information

Additional information is available on the Internet at:

[www.siemens.com/simatic-micropanels](http://www.siemens.com/simatic-micropanels)

G\_ST80\_XX\_00322

### Overview



- Operator Panel for controlling and monitoring machines and systems
- Graphics in a new dimension: small and smart
- Pixel-graphics 3" LCD, monochrome
- 8 system keys, 4 user-configurable function keys
- Specific to the SIMATIC S7-200:  
Communication with the controller takes place via the integrated interface (point-to-point)
- Connection to the controller via MPI or PROFIBUS DP cable

### Benefits

- High-contrast display for good readability
- Large keys for high operational safety
- Simple handling and configuring
- Fast configuring and start-up
  - Service-friendly thanks to maintenance-free design (no battery) and long service life of the backlighting
- Graphic library is available complete with ready-to-use display objects
- Can be used worldwide:
  - 32 languages can be configured (including Asiatic and Cyrillic character sets)
  - Up to 5 languages are selectable online

### Application

OP 73micro Operator Panels can be used wherever machines and systems are controlled and monitored locally – in production, process and building automation alike. They are used in all types of sectors and applications.

The OP 73micro has been designed specifically for use with the SIMATIC S7-200.

### Compatibility

- Same mounting cutout as for OP3 and TD 200

### Design

- 3" LCD, 160 x 48 pixels, monochrome
- 8 system keys, 4 freely configurable function keys
- Numeric and alphanumeric input using cursor control keys
- Compact design with small installation depth
- Rugged plastic housing
- The front is resistant to various oils, greases and standard detergents
- Plug-in terminals for connecting a 24 V DC power supply
- RS 485 interface for connecting the MPI connecting cable or the PPI adapter

# Operator panels

## Micro Panels

### SIMATIC OP 73micro

#### Function

- Input/output fields for displaying and changing process parameters
- Function keys for direct triggering of functions and actions. Up to 16 functions can be configured simultaneously on function keys
- Graphics can be used as icons instead of text to "label" function keys or buttons. They can also be used as simple on-screen graphics. In the configuration tool, a library is available containing an extensive range of graphics and a wide variety of objects. All editors with an OLE interface can be used as graphic editors (such as PaintShop, Designer or CorelDraw)
- Fixed texts for labeling function keys, process images and process values in different font sizes
- Bars for the graphical display of dynamic values.
- Language selection during runtime
  - 5 online languages, 32 configuration languages incl. Asian and Cyrillic character sets
- User administration (security) according to the requirements of the various sectors
  - Authentication using password
- Signaling system
  - Discrete alarms
  - Analog messages
  - Freely definable message classes (e.g., status/fault messages) for definition of acknowledgment response and display of message events
  - Message history
- Help texts for process images, messages and variables
- Arithmetic functions
- Limit value monitoring for reliable process control of inputs and outputs
- Indicator light for machine and plant status indication
- Scheduler for global function execution
- Template concept
  - Creation of picture templates (picture elements configured in the template appear in every image)
- User-friendly maintenance and configuration thanks to:
  - Backup and restoration of configuration, operating system and firmware on a PC using ProSave
  - Configuration download serially via RS485
  - Individual contrast settings
  - No batteries are necessary

#### Configuring

SIMATIC WinCC flexible Micro, Compact, Standard or Advanced engineering software Version 2004 SP1 and higher plus HSP is used for configuration.

For more information about engineering software, see HMI software/engineering software SIMATIC WinCC flexible.

A PC/PPI adapter cable is needed to download the configuration.

#### Integration

The OP 73micro can be connected to all SIMATIC S7-200 CPUs using the standard MPI bus cables or PROFIBUS DP cables (integration into networks possible).

Note:

For further information see "System interfaces"

#### Technical specifications

Product type designation	6AV6 640-0BA11-0AX0 OP 73micro
<b>Display</b>	
Size	3"
Display type	STN, black/white
Resolution (pixels) • Resolution (WxH in pixel)	160 x 48
Backlighting • MTBF backlighting (at 25 °C)	about 100,000 hours
<b>Control elements</b>	
Control elements	Membrane keyboard
Function keys, programmable	4 function keys
Connection for mouse/keyboard/barcode reader	- / - / -
<b>Keyboard</b>	
• System keys	8
• Numeric/alphabetical input	Yes / Yes
<b>Touch operation</b>	
• Touch screen	No
<b>Supply voltage</b>	
Input voltage • permissible range • Supply voltage	+20.4 V to +28.8 V DC 24 V DC
<b>Input current</b>	
Rated current	0.1 A
<b>Processor</b>	
Processor	ARM
<b>Memory</b>	
Type	Flash
Usable memory for user data	128 KB usable memory for user data
<b>Time of day</b>	
Clock • Type	Software clock, no battery backup
<b>Ambient conditions</b>	
Operating temperature • Operation (vertical installation) • Operation (max. tilt angle)	0 °C to +50 °C 0 °C to +40 °C
Storage/transport temperature • Transport, storage	-20 °C to +60 °C
Relative humidity • max. relative humidity	90 %
Mounting position	vertical
maximum permissible angle of inclination without external ventilation	+/- 80 °
<b>Degree and class of protection</b>	
Front	IP65, NEMA 4x, (when installed)
Rear	IP20
<b>Standards, approvals, certificates</b>	
Certifications	CE, GL, ABS, BV, DNV, LRS, UL, CSA, cULus, C-TICK, NEMA 4x
<b>Operating systems</b>	
Operating system	LINUX
<b>Configuration</b>	
Configuration software • Configuration tool	see "Configuration overview" from page 2/3

**Technical specifications (continued)**

<b>Product type designation</b>	<b>6AV6 640-0BA11-0AX0 OP 73micro</b>
<b>Functionality under WinCC flexible/WinCC (TIA Portal)</b>	
Task planner	Yes
Help system	Yes
Status/control	Not possible
With alarm logging system (incl. buffer and acknowledgment)	
• Number of messages	250
• Bit messages	Yes
• Analog messages	Yes
• Message buffer	Ring buffer (n x 100 entries)
Number of process images	
• Process images	250
• Variables	500
• Limit values	Yes
• Multiplexing	Yes
Image elements	
• Text objects	1,000 text elements
• Graphic object	Bit maps, icons, icon (full-screen)
• dynamic objects	Bar graphs
Lists	
• Text lists	150
• Graphic list	0
• Libraries	Yes
Security	
• Number of user groups	1
• Passwords exportable	Yes
• Number of users	1
Data carrier support	
• Multimedia Card	No
Recording	
• Printer driver	-
Fonts	
• Keyboard fonts	US American (English)
Languages	
• Configuration languages	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H
• Character sets	WinCC flexible Standard, symbol languages
Transfer (upload/download)	
• Transfer of configuration	serial
Process coupling	
• Connection to controller	see "System interface" from page 2/178
Expandability/openness	
• Open Platform Program	No
<b>Dimensions and weight</b>	
Dimensions	
• Front of enclosure (W x H)	154 mm x 84 mm
• Mounting cutout/device depth (W x H)	138 mm x 68 mm / 28.5 mm device depth
Weight	
• Weight	0.25 kg

**Ordering data****Order No.**

<b>SIMATIC OP 73micro</b>	<b>6AV6 640-0BA11-0AX0</b>
Operator panel for connection to the SIMATIC S7-200, with 3" display, monochrome incl. mounting accessories	
<b>Configuration</b>	
with SIMATIC WinCC flexible	
<b>Documentation (to be ordered separately)</b>	
<b>Operating Instructions OP 73micro/TP 177micro</b>	
• German	<b>6AV6 691-1DF01-0AA0</b>
• English	<b>6AV6 691-1DF01-0AB0</b>
• French	<b>6AV6 691-1DF01-0AC0</b>
• Italian	<b>6AV6 691-1DF01-0AD0</b>
• Spanish	<b>6AV6 691-1DF01-0AE0</b>
<b>User Manual WinCC flexible Micro</b>	
• German	<b>6AV6 691-1AA01-3AA0</b>
• English	<b>6AV6 691-1AA01-3AB0</b>
• French	<b>6AV6 691-1AA01-3AC0</b>
• Italian	<b>6AV6 691-1AA01-3AD0</b>
• Spanish	<b>6AV6 691-1AA01-3AE0</b>
<b>SIMATIC HMI Manual Collection B</b>	<b>6AV6 691-1SA01-0AX0</b>
Electronic documentation, on DVD	
5 languages (English, French, German, Italian and Spanish); contains: all currently available user manuals, manuals and communication manuals for SIMATIC HMI	
<b>Accessories</b>	see HMI Accessories

B: Subject to export regulations: AL: N and ECCN: EAR99S

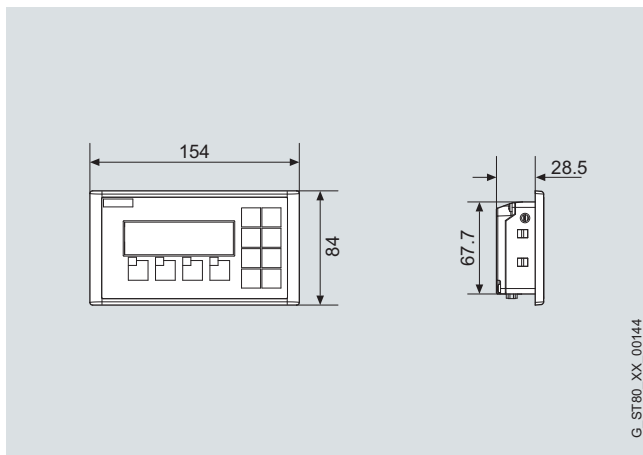
# Operator panels

## Micro Panels

### SIMATIC OP 73micro

#### Dimensional drawings

All specifications in mm. Panel cutout see technical specifications.



OP 73micro

#### More information

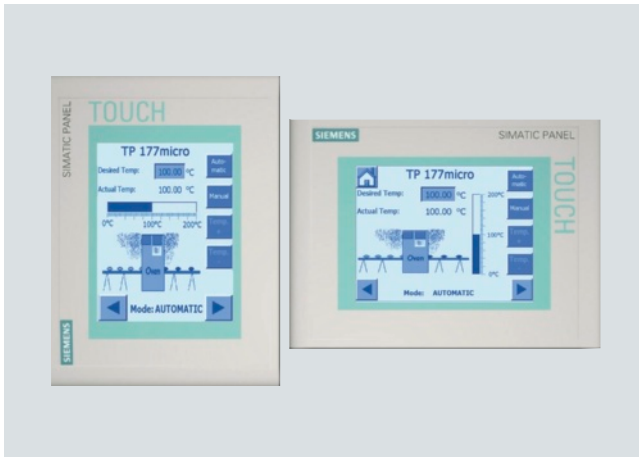
Additional information is available on the Internet at:

[www.siemens.com/simatic-micropanels](http://www.siemens.com/simatic-micropanels)

#### Note:

Do you require a specific modification or extension to the products described here? Under "Customized products", you can find information about additional and generally available products for the sector, and about the possibilities for customized modification and adaptation.

### Overview



- Touch Panel for operator control and monitoring of small machines and plants
- Low-cost entry-level product in the category of touch panels with graphic capability and all the basic functions required for simple tasks
- Pixel graphics 5.7" STN touch screen (analog/resistive), Blue mode (4 levels)
- Specially for SIMATIC S7-200: Communication to the PLC through the integrated interface over a point-to-point link
- Connection to the PLC over MPI or PROFIBUS DP cable
- SIMATIC TP 177micro is the innovative successor to the Touch Panels SIMATIC TP 070/TP 170micro

### Benefits

- Can even be used where installation space is restricted thanks to vertical installation
- Fast configuring and start-up
- Service-friendly thanks to maintenance-free design and the long service life of the backlighting
- Graphic library is available completely with ready-to-use display objects
- Can be used worldwide:
  - 32 languages can be configured (including Asiatic and Cyrillic character sets)
  - Up to 5 languages are selectable online

### Application

TP 177micro Touch Panels can be used wherever small machines and systems are controlled and monitored locally – in production, process and building automation alike. They are used in all types of sectors and applications.

The TP 177micro has been designed specifically for use with the SIMATIC S7-200. With fast response times, it is also ideal for jog mode.

#### Compatibility with TP 070/TP 170micro

- Same mounting cutout as the TP 070/TP 170micro

### Design

- 5.7" STN display, CCFL<sup>1)</sup> backlit, Blue mode (4 levels)
- Resistive analog Touch
- Compact design with small installation depth
- Rugged plastic housing
- The front is resistant to various oils, greases and standard detergents
- Numeric system keyboard for decimal, binary and hexadecimal number formats
- On-screen alphanumeric keyboard
- Plug-in terminals for connecting a 24 V DC power supply
- RS 485 interface for connection of the MPI cable or the PPI adaptor

<sup>1)</sup> Cold Cathode Fluorescence Lamps

# Operator panels

## Micro Panels

### SIMATIC TP 177micro

#### Function

- Input/output fields for displaying and changing process parameters
- Buttons for direct triggering of functions and actions. Up to 16 functions can be configured simultaneously on buttons
- Graphics can be used as icons instead of text to "label" function keys or buttons. They can also be used as background displays (wallpaper). In the configuration tool, a library is available containing extensive graphics and a wide variety of objects. All editors with an OLE interface can be used as graphics editors (such as PaintShop, Designer or CorelDraw).
- Vector graphics Simple geometric basic forms (line, circle and rectangle) can be created direct in the configuring tool
- Fixed texts for labeling function keys, process images and process values in any character size
- Bars for the graphical display of dynamic values
- Changing languages
  - 5 online languages, 32 configuration languages incl. Asian and Cyrillic character sets
- User administration (security)
  - Authentication using password
- Signaling system
  - Discrete alarms
  - Analog messages
  - Freely definable message classes (e.g., status/fault messages) for definition of acknowledgment response and display of message events
  - Message history
- Help texts for process images, messages and variables
- Arithmetic functions
- Limit value monitoring for reliable process control of inputs and outputs
- Indicator light for machine and plant status indication
- Template concept Creation of picture templates (picture elements configured in the template appear in every image)
- User-friendly maintenance and configuration thanks to:
  - Backup and restoration of configuration, operating system and firmware on a PC using ProSave
  - Configuration download serially via RS485
  - Individual contrast setting and calibration
  - Clean screen
  - No batteries are necessary

#### Configuring

SIMATIC WinCC flexible Micro, Compact, Standard or Advanced engineering software Version 2004 SP1 and higher plus HSP is used for configuration.

For more information about engineering software, see HMI software/engineering software SIMATIC WinCC flexible.

A PC/PPI adapter cable is needed to download the configuration.

#### Integration

The TP 177micro can be connected to all SIMATIC S7-200-CPU's using the standard MPI bus cables or PROFIBUS DP cables (integration into networks possible).

#### Note:

For further information see "System interfaces"

#### Technical specifications

Product type designation	6AV6 640-0CA11-0AX1 TP 177micro
<b>Display</b>	
Size	5.7"
Display type	STN, 4 shades of blue
Resolution (pixels)	
• Resolution (WxH in pixel)	320 x 240
Backlighting	
• MTBF backlighting (at 25 °C)	about 50,000 hours
<b>Control elements</b>	
Control elements	Touch screen
Function keys, programmable	None
Keyboard	
• System keys	0
• Numeric/alphabetical input	Yes / Yes
Touch operation	
• Touch screen	analog, resistive
<b>Supply voltage</b>	
Input voltage	
• permissible range	+20.4 V to +28.8 V DC
• Supply voltage	24 V DC
<b>Input current</b>	
Rated current	0.24 A
<b>Processor</b>	
Processor	ARM
<b>Memory</b>	
Type	Flash
Usable memory for user data	256 KB usable memory for user data
<b>Time of day</b>	
Clock	
• Type	Software clock, no battery backup
<b>Ambient conditions</b>	
Operating temperature	
• Operation (vertical installation)	0 °C to +50 °C
• Operation (max. tilt angle)	0 °C to +40 °C
Storage/transport temperature	
• Transport, storage	-20 °C to +60 °C
Relative humidity	
• max. relative humidity	90 %
Mounting position	vertical
maximum permissible angle of inclination without external ventilation	+/- 35 °



## Technical specifications (continued)

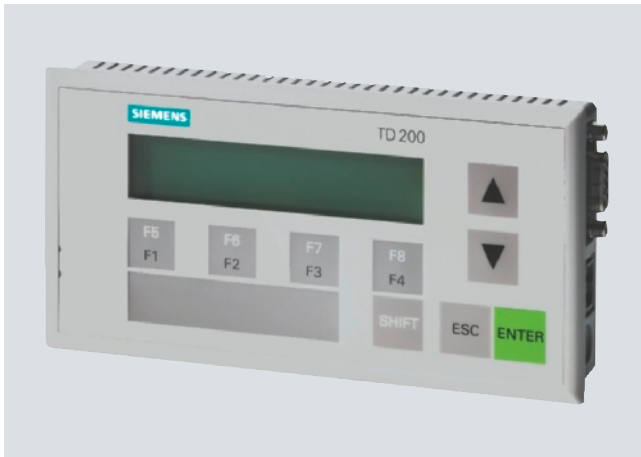
Product type designation	6AV6 640-0CA11-0AX1 TP 177micro
<b>Degree and class of protection</b>	
Front	IP65, NEMA 4x, (when installed)
Rear	IP20
<b>Standards, approvals, certificates</b>	
Certifications	CE, GL, ABS, BV, DNV, LRS, FM Class I Div. 2, UL, CSA, cULus, EX-Zone 2 (in Vorbereitung), EX-Zone 22 (in Vorbereitung), C-TICK, NEMA 4x
<b>Operating systems</b>	
Operating system	LINUX
<b>Configuration</b>	
Configuration software	
• Configuration tool	see "Configuration overview" from page 2/3
<b>Functionality under WinCC flexible/WinCC (TIA Portal)</b>	
Task planner	Yes
Help system	Yes
Status/control	Not possible
With alarm logging system (incl. buffer and acknowledgment)	
• Number of messages	500
• Bit messages	Yes
• Analog messages	Yes
• Message buffer	Ring buffer (n x 128 entries)
Number of process images	
• Process images	250
• Variables	250
• Limit values	Yes
• Multiplexing	Yes
Image elements	
• Text objects	500 text elements
• Graphic object	Bit maps, icons, icon (full-screen), vector graphics
• dynamic objects	Diagrams, bar graphs

Product type designation	6AV6 640-0CA11-0AX1 TP 177micro
Lists	
• Text lists	150
• Graphic list	100
• Libraries	Yes
Security	
• Number of user groups	1
• Passwords exportable	Yes
• Number of users	1
Data carrier support	
• Multimedia Card	No
Recording	
• Printer driver	-
Fonts	
• Keyboard fonts	US American (English)
Languages	
• Configuration languages	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H
• Character sets	WinCC flexible Standard, symbol languages
Transfer (upload/download)	
• Transfer of configuration	serial
Process coupling	
• Connection to controller	see "System interfaces" from page 2/178
Expandability/openness	
• Open Platform Program	No
<b>Dimensions and weight</b>	
Dimensions	
• Front of enclosure (W x H)	212 mm x 156 mm
• Mounting cutout/device depth (W x H)	198 mm x 142 mm / 45 mm device depth
Weight	
• Weight	0.75 kg



### SIPLUS S7-200 TD 200

#### Overview



- The user-friendly text display for the S7-200
- For operation and monitoring: display of message texts, interventions in the control program, setting of inputs and outputs
- Direct connection to CPU interface via included cable, or integration into network (also via EM 277)
- No separate power supply required
- No separate configuration software required
- Addressing and contrast adjustment via provided menu

#### Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

#### SIPLUS S7-200 TD 200

<b>Order number</b>	<b>6AG1 272-0AA30-2YA1</b>
<b>Order No. based on</b>	<b>6ES7 272-0AA30-0YA1</b>
Ambient temperature range	-25 ... +60 °C
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical data	The technical data of the standard product applies except for the ambient conditions.
<b>Ambient conditions</b>	
Relative humidity	5 ... 100 % Condensation permissible
Biologically active substances	Conformity with EN 60721-3-3, Class 3B2 mold and fungal spores (except fauna)
Chemically active substances	Conformity with EN 60721-3-3, Class 3C4 incl. salt mist and ISA-S71.04 severity level G1; G2; G3; GX <sup>1) 2)</sup>
Mechanically active substances	Conformity with EN 60721-3-3, Class 3S4 including conductive sand, dust <sup>2)</sup>
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1000 ... +2000 m) see ambient temperature range 795 ... 658 hPa (+2000 ... +3500 m) derating 10 K 658 ... 540 hPa (+3500 ... +5000 m) derating 20 K

- <sup>1)</sup> ISA-S71.04 severity level GX: Long-term load: SO<sub>2</sub> < 4.8 ppm; H<sub>2</sub>S < 9.9 ppm; Cl < 0.2 ppm; HCl < 0.66 ppm; HF < 0.12 ppm; NH < 49 ppm; O<sub>3</sub> < 0.1 ppm; NOX < 5.2 ppm  
Limit value (max. 30 min/d): SO<sub>2</sub> < 17.8 ppm; H<sub>2</sub>S < 49.7 ppm; Cl < 1.0 ppm; HCl < 3.3 ppm; HF < 2.4 ppm; NH < 247 ppm; O<sub>3</sub> < 1.0 ppm; NOX < 10.4 ppm

- <sup>2)</sup> The supplied plug covers must remain in place over the unused interface when operated in atmospheres containing corrosive gases!

The technical documentation on SIPLUS can be found here:

[www.siemens.com/siplus-extreme](http://www.siemens.com/siplus-extreme)

Ordering data	Order No.
<b>SIPLUS S7-200 TD 200 Text Display</b> (extended temperature range and medial exposure) for connection to SIMATIC S7-200, used from STEP 7 Micro/WIN V3.2 SP4, including cable	<b>6AG1 272-0AA30-2YA1</b>
<b>Connection cable</b> for connection of TD 100C or TD 200C to S7-200	<b>6ES7 901-3EB10-0XA0</b>
<b>Accessories</b>	see HMI accessories

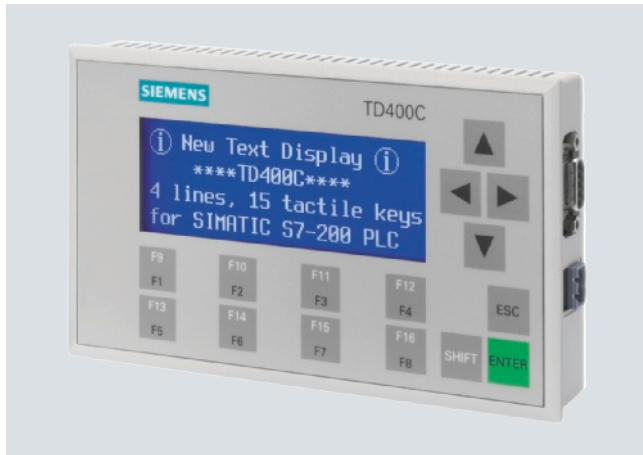
A: Subject to export regulations: AL: N and ECCN: EAR99H

# Operator panels

## SIPLUS Micro Panels

### SIPLUS S7-200 TD 400C

#### Overview



- Additional screen space and high readability via backlit four-line display
- Customizable user interface with 15 tactile keys
- Audible and visual feedback upon pressing of key
- Optimal support of the S7-200:
  - Direct connection to the S7-200 interface via included cable
  - No separate power supply required
  - Configuration with STEP 7 Micro / WIN V4 SP6

#### Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

#### SIPLUS S7-200 TD 400C

<b>Order number</b>	<b>6AG1 640-0AA00-2AX1</b>
<b>Order No. based on</b>	<b>6AV6 640-0AA00-0AX1</b>
Ambient temperature range	-10 ... + 60 °C
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical data	The technical data of the standard product applies except for the ambient conditions.
<b>Ambient conditions</b>	
Relative humidity	5 ... 100 % Condensation permissible
Biologically active substances	Conformity with EN 60721-3-3, Class 3B2 mold and fungal spores (except fauna)
Chemically active substances	Conformity with EN 60721-3-3, Class 3C4 incl. salt mist and ISA-S71.04 severity level G1; G2; G3; GX <sup>1) 2)</sup>
Mechanically active substances	Conformity with EN 60721-3-3, Class 3S4 including conductive sand, dust <sup>2)</sup>
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1000 ... +2000 m) see ambient temperature range 795 ... 658 hPa (+2000 ... +3500 m) derating 10 K 658 ... 540 hPa (+3500 ... +5000 m) derating 20 K

- 1) ISA-S71.04 severity level GX: Long-term load:  
 SO<sub>2</sub> < 4.8 ppm; H<sub>2</sub>S < 9.9 ppm; Cl < 0.2 ppm; HCl < 0.66 ppm;  
 HF < 0.12 ppm; NH < 49 ppm; O<sub>3</sub> < 0.1 ppm; NO<sub>x</sub> < 5.2 ppm  
 Threshold/ limit value (max. 30 min/d): SO<sub>2</sub> < 17.8 ppm;  
 H<sub>2</sub>S < 49.7 ppm; Cl < 1.0 ppm; HCl < 3.3 ppm; HF < 2.4 ppm;  
 NH < 247 ppm; O<sub>3</sub> < 1.0 ppm; NO<sub>x</sub> < 10.4 ppm
- 2) The supplied plug covers must remain in place over the unused interface when operated in atmospheres containing corrosive gases!

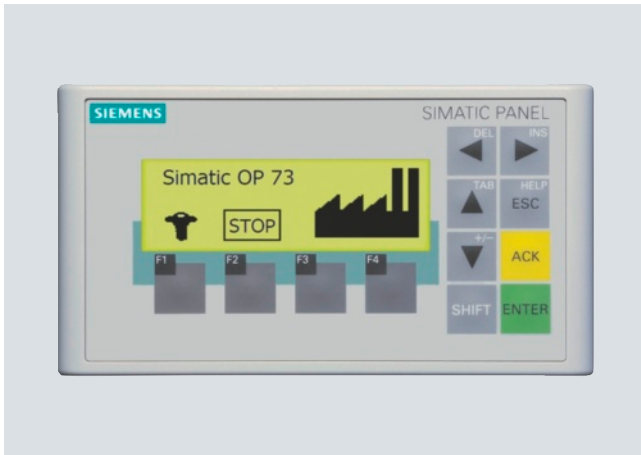
The technical documentation on SIPLUS can be found here:

[www.siemens.com/siplus-extreme](http://www.siemens.com/siplus-extreme)

Ordering data	Order No.
<b>SIPLUS S7-200 TD 400C</b> (extended temperature range and medial exposure)  with individually adaptable user interface on the front panel; for connection to SIMATIC S7-200; usable from STEP 7 Micro / WIN V4 SP6, including cable	<b>6AG1 640-0AA00-2AX1</b>
<b>Connection cable</b> for connection of TD 100C/ TD 200C or TD 400C to S7-200	<b>6ES7 901-3EB10-0XA0</b>
<b>Empty sheets</b> for printing customized keyboard layouts; 2 perforated sheets per document; 10 sheets per packing unit	<b>6AV6 671-0AP00-0AX0</b>
<b>Accessories</b>	see HMI accessories

A: Subject to export regulations: AL: N and ECCN: EAR99H

### Overview



- Operator Panel for operator control and monitoring functions of machines and plants
- Graphics in a new dimension: Small and smart
- Full graphics 3" LCD, monochrome
- 8 system keys, 4 freely programmable function keys
- All interfaces are on-board (e.g. MPI, PROFIBUS DP)
- SIMATIC OP 73 is the successor to the OP3 operator panel

### Benefits

- High-contrast display for good readability
- Large keys for high operational safety
- Simple handling and configuring
- Integral component of Totally Integrated Automation (TIA): Increases productivity, minimizes the engineering outlay, reduces lifecycle costs
- Service-friendly through maintenance-free design (no battery) and high service life of the backlighting
- Graphic library is available completely with ready-to-use display objects
- Can be used worldwide:
  - 32 languages can be configured (including Asiatic and Cyrillic character sets)
  - Up to 5 languages are selectable online
  - Language-dependent texts and graphics

### Application

The OP 73 operator panel can be used wherever the operator control and monitoring of machines and systems is performed directly on site – in manufacturing, process and building automation. They may be used in all kinds of industries and applications.

#### Compatibility with OP3

- Same installation cutout as the OP3
- Transfer of the OP3 configurations from ProTool/Lite, ProTool to WinCC flexible

Migration guide with description of the major changes to OP3 or ProTool

### Design

- 3" LCD, 160 x 48 pixels, monochrome
- 8 system keys, 4 user-configurable function keys
- Numerical and alphanumeric input option via cursor keys
- Compact design with low mounting depth
- Rugged plastic housing
- The front is resistant to various oils, greases and standard detergents
- Plug-type terminals for a 24 V DC power supply
- RS 485 interface for process connections (MPI, PROFIBUS DP up to 1.5 Mbit/s) and for configuration download

# Operator panels

## Panels – 70 series

### SIMATIC OP 73

#### Function

- Input/output fields for displaying and changing process parameters
- Function keys for direct triggering of functions and actions. Up to 16 functions can be configured simultaneously on function keys.
- Graphics can be used as icons instead of text to "label" function keys or buttons. They can also be used as simple on-screen graphics. In the configuration tool, a library is available containing an extensive range of graphics and a wide variety of objects. All editors with an OLE interface can be used as graphic editors (such as PaintShop, Designer or CorelDraw).
- Fixed texts for labeling function keys, process images and process values in different font sizes
- Bars are used for the graphical display of dynamic values
- Language selection during runtime
  - 5 online languages, 32 configuration languages incl. Asian and Cyrillic character sets
  - Language-dependent texts and graphics
- User administration (security)
  - Authentication with user ID and password
  - User-group-specific rights
- Signaling system
  - Discrete alarms
  - Analog alarms
  - Freely definable message classes (e.g., status/fault messages) for definition of acknowledgment response and display of message events
  - Message history
- Help texts for process images, messages and variables
- Arithmetic functions
- Limit value monitoring for reliable process control of inputs and outputs
- Indicator light for machine and plant status indication
- Scheduler for global function execution
- Template concept; Creation of screen templates (picture elements configured in the template appear in every screen)
- Simple maintenance and configuration thanks to:
  - backup and restoration of configuration, operating system and firmware on a PC using ProSave
  - configuration download via MPI/PROFIBUS DP or serially via RS485
  - individual contrast settings
  - no batteries are necessary

#### Configuring

Configuration is performed using the SIMATIC WinCC flexible Compact, Standard or Advanced engineering software, Version 2004 SP1 plus HSP or higher, or with the SIMATIC WinCC (TIA Portal) Comfort or Professional engineering software, V11 or higher.

For more information about engineering software, see HMI software/engineering software SIMATIC WinCC flexible/WinCC (TIA Portal).

#### Integration

The OP 73 can be connected to:

- SIMATIC S7-200/-300/-400
- SIMATIC WinAC Software/Slot PLC

#### Note:

For further information, see "System interfaces".

#### Technical specifications

Product type designation	6AV6 641-0AA11-0AX0 OP 73
<b>Display</b>	
Size	3"
Display type	STN, black/white
Resolution (pixels)	
• Resolution (WxH in pixel)	160 x 48
Backlighting	
• MTBF backlighting (at 25 °C)	about 100,000 hours
<b>Control elements</b>	
Control elements	Membrane keyboard
Function keys, programmable	4 function keys
Connection for mouse/keyboard/barcode reader	- / - / -
Keyboard	
• System keys	8
• Numeric/alphabetical input	Yes / Yes
<b>Supply voltage</b>	
Input voltage	
• permissible range	+20.4 V to +28.8 V DC
• Supply voltage	24 V DC
<b>Input current</b>	
Rated current	0.1 A
<b>Processor</b>	
Processor	ARM
<b>Memory</b>	
Type	Flash
Usable memory for user data	256 KB usable memory for user data
<b>Time of day</b>	
Clock	
• Type	Software clock, no battery backup
<b>Ambient conditions</b>	
Operating temperature	
• Operation (vertical installation)	0 °C to +50 °C
• Operation (max. tilt angle)	0 °C to +40 °C
Storage/transport temperature	
• Transport, storage	-20 °C to +60 °C
Relative humidity	
• max. relative humidity	90 %
Mounting position	vertical
maximum permissible angle of inclination without external ventilation	+/- 80 °

### Technical specifications (continued)

Product type designation	6AV6 641-0AA11-0AX0 OP 73
<b>Degree and class of protection</b>	
Front	IP65, NEMA 4x, (when installed)
Rear	IP20
<b>Standards, approvals, certificates</b>	
Certifications	CE, GL, ABS, BV, DNV, LRS, UL, CSA, cULus, C-TICK, NEMA 4x
<b>Operating systems</b>	
Operating system	LINUX
<b>Configuration</b>	
Configuration software	
• Configuration tool	see "Configuration software" from page 2/3
<b>Functionality under WinCC flexible/WinCC (TIA Portal)</b>	
Task planner	Yes
Help system	Yes
Status/control	Not possible
With alarm logging system (incl. buffer and acknowledgment)	
• Number of messages	500
• Bit messages	Yes
• Analog messages	Yes
• Message buffer	Ring buffer (n x 256 entries), non-retentive
Number of process images	
• Process images	500
• Variables	1 000
• Limit values	Yes
• Multiplexing	Yes
Image elements	
• Text objects	1,000 text elements
• Graphic object	Bit maps, icons, icon (full-screen)
• dynamic objects	Bar graphs

Product type designation	6AV6 641-0AA11-0AX0 OP 73
Lists	
• Text lists	150
• Graphic list	0
• Libraries	Yes
Security	
• Number of user groups	50
• Passwords exportable	Yes
• Number of user rights	32
Recording	
• Recording/Printing	-
Fonts	
• Keyboard fonts	US American (English)
Languages	
• Configuration languages	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H
• Character sets	WinCC flexible Standard, symbol languages
Transfer (upload/download)	
• Transfer of configuration	MPI/PROFIBUS DP, serial, automatic transfer recognition
Process coupling	
• Connection to controller	see "System interfaces" from page 2/178
Expandability/openness	
• Open Platform Program	No
<b>Dimensions and weight</b>	
Dimensions	
• Front of enclosure (W x H)	154 mm x 84 mm
• Mounting cutout/device depth (W x H)	138 mm x 68 mm / 28.5 mm device depth
Weight	
• Weight	0.25 kg

# Operator panels

## Panels – 70 series

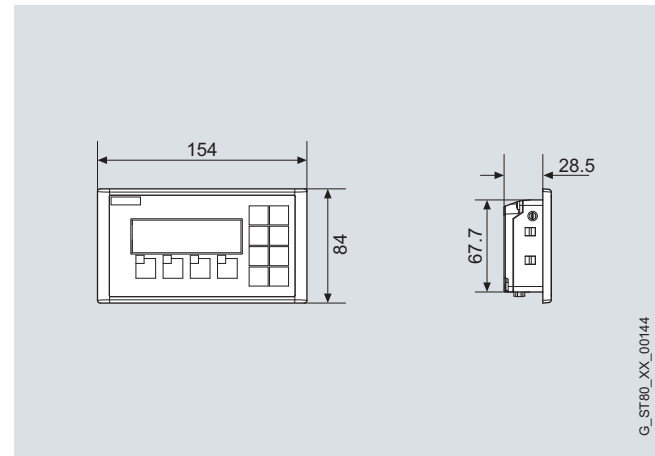
### SIMATIC OP 73

Ordering data	Order No.
<b>SIMATIC OP 73</b> Operator Panel with 3" display, monochrome, including mounting accessories	<b>6AV6 641-0AA11-0AX0</b>
<b>Configuration</b> with SIMATIC WinCC flexible or with SIMATIC WinCC (TIA Portal)	see HMI Software
<b>Documentation (to be ordered separately)</b> <b>User Manual WinCC flexible Compact/Standard/Advanced</b> <ul style="list-style-type: none"> <li>German</li> <li>English</li> <li>French</li> <li>Italian</li> <li>Spanish</li> </ul>	<b>6AV6 691-1AB01-3AA0</b> <b>6AV6 691-1AB01-3AB0</b> <b>6AV6 691-1AB01-3AC0</b> <b>6AV6 691-1AB01-3AD0</b> <b>6AV6 691-1AB01-3AE0</b>
<b>User Manual WinCC flexible Communication</b> <ul style="list-style-type: none"> <li>German</li> <li>English</li> <li>French</li> <li>Italian</li> <li>Spanish</li> </ul>	<b>6AV6 691-1CA01-3AA0</b> <b>6AV6 691-1CA01-3AB0</b> <b>6AV6 691-1CA01-3AC0</b> <b>6AV6 691-1CA01-3AD0</b> <b>6AV6 691-1CA01-3AE0</b>
<b>SIMATIC HMI Manual Collection B</b> Electronic documentation, on DVD  5 languages (English, French, German, Italian and Spanish); contains: all currently available user manuals, manuals and communication manuals for SIMATIC HMI	<b>6AV6 691-1SA01-0AX0</b>
<b>Accessories</b>	see HMI accessories

B: Subject to export regulations: AL: N and ECCN: EAR99S

### Dimensional drawings

All specifications in mm. Panel cutout see technical specifications.



SIMATIC OP73

### More information

Additional information is available on the Internet at:

[www.siemens.com/simatic-panels](http://www.siemens.com/simatic-panels)

#### Note:

Do you require a specific modification or extension to the products described here? Under "Customized products", you can find information about additional and generally available products for the sector, and about the possibilities for customized modification and adaptation.

G\_ST80\_XX\_00144



### Overview



- Compact Operator Panel for operator control and monitoring of machines and plants
- Graphics in a new dimension – small and smart
- Pixel-graphics 4.5" LC display, monochrome
- 23 system keys, 8 freely-configurable and freely-inscribable function keys (4 with LEDs)
- All interfaces (e.g. MPI, PROFIBUS DP) are onboard interfaces
- Together with OP 77B, successor of the successful OP7

### Benefits

- High-contrast display for good readability
- Large keys for high operational safety
- Simple handling and configuring
- Integral component of Totally Integrated Automation (TIA): Increases productivity, minimizes the engineering outlay, reduces the lifecycle costs
- Reduction in service and startup costs thanks to maintenance-free design (no battery) and long service life of the backlighting
- Can be used worldwide:
  - 32 languages can be configured (including Asiatic and Cyrillic character sets)
  - Up to 5 languages are selectable online
  - Language-dependent texts and graphics
- Graphic library is available completely with ready-to-use display objects

### Application

OP 77A Operator Panels can be used wherever machines and systems are controlled and monitored locally - in production, process and building automation alike. They are used in all types of sectors and applications.

#### Compatibility with OP7

- Same panel cutout as OP7
- Importing of OP7 configurations from ProTool/Lite, ProTool and ProTool/Pro to WinCC flexible

Migration manual with description of most important differences from OP7 or ProTool

### Design

- 4.5" LCD, 160 x 64 pixels, monochrome
- 23 system keys, 8 freely-configurable and freely-inscribable function keys (4 with LEDs)
- Numeric and alphanumeric input facilities
- Compact design with shallow installation depth
- Rugged plastic housing
- The front is resistant to various oils, greases and standard detergents
- Plug-type terminals for connection of a 24 V DC power supply
- RS 485 interface for process links (MPI, PROFIBUS DP up to 1.5 Mbit/s) and for downloading the configuration

# Operator panels

## Panels – 70 series

### SIMATIC OP 77A

#### Function

- Permanent window and template concept for creating screen templates
- Input/output fields for displaying and changing process parameters
- Function keys are used for directly actuating functions and actions. Up to 16 functions can be configured simultaneously on function keys.
- Graphics can be used as icons instead of text to "label" function keys or buttons. They can also be used as simple on-screen graphics. In the configuration tool, a library is available containing an extensive range of graphics and a wide variety of objects. All editors with an OLE interface can be used as graphic editors (such as PaintShop, Designer or CorelDraw).
- Fixed texts for labeling function keys, process images and process values in any character size
- Bars are used for the graphical display of dynamic values
- Display selection from the PLC supports operator prompting from the PLC
- Language selection during runtime
  - 5 online languages, 32 configuration languages incl. Asian and Cyrillic character sets
  - Language-dependent texts and graphics
- User administration (security) according to the requirements of various sectors
  - Authentication with user ID and password
  - User-group-specific rights
- Signaling system
  - Freely definable message classes (e.g., status/fault messages) for definition of acknowledgment response and display of message events
  - Message history
- Recipe management
- Help texts for process images, messages and variables
- Arithmetic functions
- Limit value monitoring for reliable process control of inputs and outputs
- Indicator light for machine and plant status indication
- Scheduler for cyclic function execution
- Template concept; Picture elements configured in the template appear in every picture
- Simple maintenance and configuration thanks to:
  - Backup and restoration of the configuration, operating system, data records and firmware on a PC using ProSave
  - Configuration download/upload via MPI/PROFIBUS DP and serially via RS 485
  - Individual contrast settings
  - No batteries are necessary

#### Configuration

Configuration is performed using the SIMATIC WinCC flexible Compact, Standard or Advanced configuration software, Version 2004 SP1 plus HSP or higher, or with the SIMATIC WinCC (TIA Portal) Comfort or Professional engineering software, V11 or higher.

For more information about engineering software, see HMI software/engineering software SIMATIC WinCC flexible/WinCC (TIA Portal).

#### Integration

The OP 77A can be connected to:

- SIMATIC S7-200/-300/-400
- SIMATIC WinAC Software/Slot PLC
- Non-Siemens controllers:
  - Allen Bradley
  - Mitsubishi
  - Modicon
  - Omron

#### Note:

For further information, see "System interfaces".

#### Technical specifications

Product type designation	6AV6 641-0BA11-0AX1 OP 77A
<b>Display</b>	
Size	4.5"
Display type	STN, black/white
Resolution (pixels)	
• Resolution (WxH in pixel)	160 x 64
Backlighting	
• MTBF backlighting (at 25 °C)	about 100,000 hours
<b>Control elements</b>	
Control elements	Membrane keyboard
Function keys, programmable	8 function keys, 4 with LEDs
Connection for mouse/keyboard/barcode reader	- / - / -
Keyboard	
• System keys	23
• Numeric/alphabetical input	Yes / Yes
<b>Supply voltage</b>	
Input voltage	
• permissible range	+20.4 V to +28.8 V DC
• Supply voltage	24 V DC
<b>Input current</b>	
Rated current	0.2 A
<b>Processor</b>	
Processor	ARM
<b>Memory</b>	
Type	Flash / RAM
Usable memory for user data	256 KB usable memory for user data
<b>Type of output</b>	
LED colors	Green
<b>Time of day</b>	
Clock	
• Type	Software clock, no battery backup
<b>Interfaces</b>	
USB port	No
PC card slot	No
CF card slot	No
Multi Media Card slot	No
Industrial Ethernet	
• Industrial Ethernet interface	No

### Technical specifications (continued)

Product type designation	6AV6 641-0BA11-0AX1 OP 77A
<b>Ambient conditions</b>	
Operating temperature	
• Operation (vertical installation)	0 °C to +50 °C
• Operation (max. tilt angle)	0 °C to +40 °C
Storage/transport temperature	
• Transport, storage	-20 °C to +60 °C
Relative humidity	
• max. relative humidity	90 %
Mounting position	vertical
maximum permissible angle of inclination without external ventilation	+/- 80 °
<b>Degree and class of protection</b>	
Front	IP65, NEMA 4x, NEMA 12 (when installed)
Rear	IP20
<b>Standards, approvals, certificates</b>	
Certifications	CE, GL, ABS, BV, DNV, LRS, FM Class I Div. 2, UL, CSA, cULus, EX-Zone 2 (in Vorbereitung), EX-Zone 22 (in Vorbereitung), C-TICK, NEMA 4x, NEMA 12
<b>Operating systems</b>	
Operating system	LINUX
<b>Configuration</b>	
Configuration software	
• Configuration tool	see "Configuration overview" from page 2/3
<b>Functionality under WinCC flexible/WinCC (TIA Portal)</b>	
Task planner	Yes
Help system	Yes
Status/control	Not possible
With alarm logging system (incl. buffer and acknowledgment)	
• Number of messages	1 000
• Bit messages	Yes
• Analog messages	Yes
• Message buffer	Ring buffer (n x 256 entries), non-retentive
Recipes	
• Recipes	5
• Data records per recipe	20
• Entries per data record	20
• Recipe memory	32 KB integrated Flash

Product type designation	6AV6 641-0BA11-0AX1 OP 77A
Number of process images	
• Process images	500
• Variables	1 000
• Limit values	Yes
• Multiplexing	Yes
Image elements	
• Text objects	1,000 text elements
• Graphic object	Bit maps, icons, icon (full-screen)
• dynamic objects	Bar graphs
Lists	
• Text lists	300
• Graphic list	0
• Libraries	Yes
Security	
• Number of user groups	50
• Passwords exportable	Yes
• Number of user rights	32
Recording	
• Recording/Printing	-
Fonts	
• Keyboard fonts	US American (English)
Languages	
• Configuration languages	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H
• Character sets	WinCC flexible Standard, symbol languages
Transfer (upload/download)	
• Transfer of configuration	MPI/PROFIBUS DP, serial, automatic transfer recognition
Process coupling	
• Connection to controller	see "System interfaces" from page 2/178
Expandability/openness	
• Open Platform Program	No
<b>Dimensions and weight</b>	
Dimensions	
• Front of enclosure (W x H)	150 mm x 186 mm
• Mounting cutout/device depth (W x H)	135 mm x 171 mm / 38.5 mm device depth
Weight	
• Weight	0.5 kg

# Operator panels

## Panels – 70 series

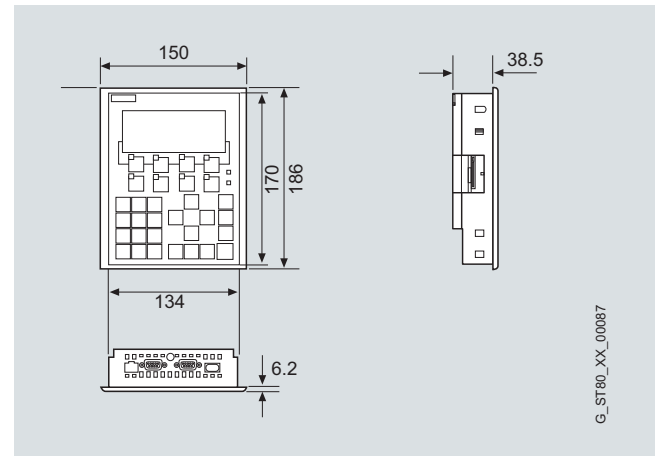
### SIMATIC OP 77A

Ordering data	Order No.
<b>SIMATIC OP 77A</b> Operator Panel with 4.5" display, monochrome, including mounting accessories	<b>6AV6 641-0BA11-0AX1</b>
<b>Configuration</b> with SIMATIC WinCC flexible or with SIMATIC WinCC (TIA Portal)	see HMI Software
<b>Documentation (to be ordered separately)</b> <b>User Manual WinCC flexible Compact/Standard/Advanced</b> <ul style="list-style-type: none"> <li>German</li> <li>English</li> <li>French</li> <li>Italian</li> <li>Spanish</li> </ul>	<b>6AV6 691-1AB01-3AA0</b> <b>6AV6 691-1AB01-3AB0</b> <b>6AV6 691-1AB01-3AC0</b> <b>6AV6 691-1AB01-3AD0</b> <b>6AV6 691-1AB01-3AE0</b>
<b>User Manual WinCC flexible Communication</b> <ul style="list-style-type: none"> <li>German</li> <li>English</li> <li>French</li> <li>Italian</li> <li>Spanish</li> </ul>	<b>6AV6 691-1CA01-3AA0</b> <b>6AV6 691-1CA01-3AB0</b> <b>6AV6 691-1CA01-3AC0</b> <b>6AV6 691-1CA01-3AD0</b> <b>6AV6 691-1CA01-3AE0</b>
<b>SIMATIC HMI Manual Collection B</b> Electronic documentation, on DVD  5 languages (English, French, German, Italian and Spanish); contains: all currently available user manuals, manuals and communication manuals for SIMATIC HMI	<b>6AV6 691-1SA01-0AX0</b>
<b>Accessories</b>	see HMI accessories

B: Subject to export regulations: AL: N and ECCN: EAR99S

### Dimensional drawings

All specifications in mm. Panel cutout see technical specifications.



OP 77A

### More information

Additional information is available on the Internet at:

[www.siemens.com/simatic-panels](http://www.siemens.com/simatic-panels)

#### Note:

Do you require a specific modification or extension to the products described here? Under "Customized products", you can find information about additional and generally available products for the sector, and about the possibilities for customized modification and adaptation.

### Overview



- Compact Operator Panel for operator control and monitoring of machines and plants
- Graphics in a new dimension – small and smart
- Pixel-graphics 4,5" LCD, monochrome
- 23 system keys, 8 freely-configurable and freely-inscribable function keys (4 with LEDs)
- All interfaces (e.g. MPI, PROFIBUS DP) are onboard interfaces
- Non-Siemens PLCs can be connected using easy-to-use drivers
- Combined with OP 77A successor of the successful OP 7

### Benefits

- High-contrast display for good legibility
- Large keys for improved operational reliability
- Easy to handle and configure
- Integral component of Totally Integrated Automation (TIA): Increased productivity, minimum engineering overhead, reduction in life-cycle costs
- Reduction of service and commissioning costs through:
  - Remote downloading of the configuration with automatic transfer recognition even via WAN (Wide Area Network)
  - Maintenance-free design (no battery) and long service life of the backlighting
- Can be used worldwide:
  - 32 languages can be configured (incl. Asian and Cyrillic character sets)
  - Up to 5 languages can be switched online
  - Language-dependent texts and graphics
- Graphic library available with off-the-shelf picture objects
- Standard hardware and software interfaces for increasing flexibility:
  - Optional SD Card, can be used for recipe data sets and for backup of configuration/system data
- Integrated printer port (USB)

### Application

OP 77B Operator Panels can be used wherever machines and systems are controlled and monitored locally - in production, process and building automation alike. They may be used in all kinds of industries and applications.

#### Compatibility with OP7

- Same panel cutout as OP7
- Importing of OP7 configurations from ProTool/Lite, ProTool and ProTool/Pro to WinCC flexible

Migration manual with description of most important differences from OP7 or ProTool

### Design

- 4.5" LC display, 160 x 64 pixels, monochromatic
- 23 system keys, 8 freely-configurable and freely-inscribable function keys (4 with LEDs)
- Numeric and alphanumeric input options
- Compact design with low mounting depth
- Rugged plastic enclosure
- The front is resistant to various oils, greases and standard detergents
- Plug-in terminals for 24 V DC power supply
- Interfaces:
  - RS 485/422 interface for process connections (MPI, PROFIBUS DP up to 12 Mbit/s)
  - RS 232 interface for process connections
  - USB printer interface
- Slot for Multi Media Card
- Slot for SD Card

# Operator panels

## Panels – 70 series

### SIMATIC OP 77B

#### Function

- Permanent window and template concept for creating screen templates
- Input/output fields for displaying and changing process parameters
- Function keys for directly actuating functions and actions. Up to 16 functions can be configured simultaneously on function keys. They can be used directly as PROFIBUS DP input I/Os.
- Graphics can be used as icons instead of text to "label" function keys or buttons. They can also be used as simple on-screen graphics. In the configuration tool, a library is available containing an extensive range of graphics and a wide variety of objects. All editors with an OLE interface can be used as graphic editors (such as PaintShop, Designer or CorelDraw).
- Fixed texts for labeling function keys, process images and process values in any character size
- Bars are used for the graphical display of dynamic values
- Display selection from the PLC supports operator prompting from the PLC
- Language selection during runtime
  - 5 online languages, 32 configuration languages incl. Asian and Cyrillic character sets
  - Language-dependent texts and graphics
- User administration (security) according to the requirements of the various sectors
  - Authentication with user ID and password
  - User-group-specific rights
- Signaling system
  - Analog alarms
  - Bit messages as well as the Alarm S message frame procedure for SIMATIC S7
  - Freely definable message classes (e. g. status/fault messages) for definition of acknowledgment response and display of message events
  - Message history
- Recipe management
  - With additional data storage (on optional multi-media card)
  - Storage of recipe data in standard Windows format (CSV)
  - External processing using standard tools such as Excel and Access is possible
- Help texts for process images, messages and variables
- Arithmetic functions
- Limit value monitoring for reliable process control of inputs and outputs
- Indicator light for machine and plant status indication
- Scheduler (timer) for cyclic function execution
- Print hard copy, messages and user-configurable reports
- Template concept  
Picture elements configured in the template appear in every picture

- User-friendly maintenance and configuration thanks to:
  - Backup and restoring of the configuration, operating system, data records and firmware on the optional Multi Media Card
  - Backup and restoration of the configuration, operating system, data records and firmware on a PC using ProSave
  - Configuration download/upload via MPI/PROFIBUS DP/RS 232/USB
  - Automatic transfer identification
  - Individual contrast settings
  - Configuration simulation directly on the configuration computer
  - No batteries are necessary

#### Configuration

Configuration is performed using the SIMATIC WinCC flexible Compact, Standard or Advanced configuration software, Version 2004 or higher, or with the SIMATIC WinCC Comfort or Professional engineering software, V11 or higher.

For more information about engineering software, see HMI software/engineering software SIMATIC WinCC flexible/WinCC.

#### Integration

The OP 77B can be connected to:

- SIMATIC S7-200/-300/-400
- SIMATIC WinAC Software/Slot PLC
- SIMATIC S5
- SIMATIC 505
- Non-Siemens controllers:
  - Allen Bradley
  - Mitsubishi
  - LG GLOFA GM
  - Modicon
  - GE-Fanuc
  - Omron

#### Note:

For further information, see "System interfaces".

### Technical specifications

Product type designation	6AV6 641-0CA01-0AX1 OP 77B
<b>Display</b>	
Size	4.5"
Display type	STN, black/white
Resolution (pixels)	
• Resolution (WxH in pixel)	160 x 64
Backlighting	
• MTBF backlighting (at 25 °C)	about 100,000 hours
<b>Control elements</b>	
Control elements	Membrane keyboard
Function keys, programmable	8 function keys, 4 with LEDs
Connection for mouse/keyboard/barcode reader	- / - / -
Keyboard	
• System keys	23
• Numeric/alphabetical input	Yes / Yes
<b>Supply voltage</b>	
Input voltage	
• permissible range	+20.4 V to +28.8 V DC
• Supply voltage	24 V DC
<b>Input current</b>	
Rated current	0.2 A
<b>Processor</b>	
Processor	ARM
<b>Memory</b>	
Type	Flash / RAM
Usable memory for user data	1000 KB usable memory for user data
<b>Type of output</b>	
LED colors	Green
<b>Time of day</b>	
Clock	
• Type	Software clock, no battery backup
<b>Interfaces</b>	
USB port	1 x USB
Multimedia card	combined
Industrial Ethernet	
• Industrial Ethernet interface	No
<b>Ambient conditions</b>	
Operating temperature	
• Operation (vertical installation)	0 °C to +50 °C
• Operation (max. tilt angle)	0 °C to +40 °C
Storage/transport temperature	
• Transport, storage	-20 °C to +60 °C
Relative humidity	
• max. relative humidity	90 %
Mounting position	vertical
maximum permissible angle of inclination without external ventilation	+/- 80 °

Product type designation	6AV6 641-0CA01-0AX1 OP 77B
<b>Degree and class of protection</b>	
Front	IP65, NEMA 4x, NEMA 12 (when installed)
Rear	IP20
<b>Standards, approvals, certificates</b>	
Certifications	CE, GL, ABS, BV, DNV, LRS, FM Class I Div. 2, UL, CSA, cULus, EX-Zone 2 (in Vorbereitung), EX-Zone 22 (in Vorbereitung), C-TICK, NEMA 4x, NEMA 12
<b>Operating systems</b>	
Operating system	Windows CE
<b>Configuration</b>	
Configuration software	
• Configuration tool	see "Configuration overview" from page 2/3
<b>Functionality under WinCC flexible/WinCC (TIA portal)</b>	
Task planner	Yes
Help system	Yes
With alarm logging system (incl. buffer and acknowledgment)	
• Number of messages	1 000
• Bit messages	Yes
• Analog messages	Yes
• Message buffer	Ring buffer (n x 256 entries), non-retentive
Recipes	
• Recipes	100
• Data records per recipe	200
• Entries per data record	200
• Recipe memory	32 KB integrated Flash, expandable
Number of process images	
• Process images	500
• Variables	1 000
• Limit values	Yes
• Multiplexing	Yes
Image elements	
• Text objects	2,500 text elements
• Graphic object	Bit maps, icons, icon (full-screen)
• dynamic objects	Bar graphs
Lists	
• Text lists	300
• Graphic list	0
• Libraries	Yes



# Operator panels

## Panels – 70 series

### SIMATIC OP 77B

#### Technical specifications (continued)

<b>Product type designation</b>	<b>6AV6 641-0CA01-0AX1 OP 77B</b>
Security	
• Number of user groups	50
• Passwords exportable	Yes
• Number of user rights	32
Data carrier support	
• Multimedia Card	Yes
Recording	
• Recording/Printing	Alarms, report (shift report), hardcopy
• Printer driver	ESC/P2, PCL3/PCL6
Fonts	
• Keyboard fonts	US American (English)
Languages	
• Configuration languages	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H
• Character sets	Tahoma, WinCC flexible Standard, symbol languages, all freely scalable
Transfer (upload/download)	
• Transfer of configuration	MPI/PROFIBUS DP, serial, USB, by means of external storage medium, automatic transfer recognition
Process coupling	
• Connection to controller	see "System interfaces" from page 2/178
Expandability/openness	
• Open Platform Program	No
<b>I/O</b>	
I/O devices	Printer
<b>Dimensions and weight</b>	
Dimensions	
• Front of enclosure (W x H)	150 mm x 186 mm
• Mounting cutout/device depth (W x H)	135 mm x 171 mm / 38.5 mm device depth
Weight	
• Weight	0.5 kg

#### Ordering data

#### Order No.

<b>SIMATIC OP 77B</b>	E	<b>6AV6 641-0CA01-0AX1</b>
Operator Panel with 4.5" display, monochrome, including mounting accessories		
<b>Configuration</b>		
with SIMATIC WinCC flexible or with SIMATIC WinCC (TIA Portal)		see HMI Software
<b>Documentation (to be ordered separately)</b>		
<b>User Manual WinCC flexible Compact/Standard/Advanced</b>		
• German		<b>6AV6 691-1AB01-3AA0</b>
• English		<b>6AV6 691-1AB01-3AB0</b>
• French		<b>6AV6 691-1AB01-3AC0</b>
• Italian		<b>6AV6 691-1AB01-3AD0</b>
• Spanish		<b>6AV6 691-1AB01-3AE0</b>
<b>User Manual WinCC flexible Communication</b>		
• German		<b>6AV6 691-1CA01-3AA0</b>
• English		<b>6AV6 691-1CA01-3AB0</b>
• French		<b>6AV6 691-1CA01-3AC0</b>
• Italian		<b>6AV6 691-1CA01-3AD0</b>
• Spanish		<b>6AV6 691-1CA01-3AE0</b>
<b>SIMATIC HMI Manual Collection</b>	B	<b>6AV6 691-1SA01-0AX0</b>
Electronic documentation, on DVD		
5 languages (English, French, German, Italian and Spanish); contains: all currently available user manuals, manuals and communi- cation manuals for SIMATIC HMI		
<b>Accessories</b>		see HMI accessories

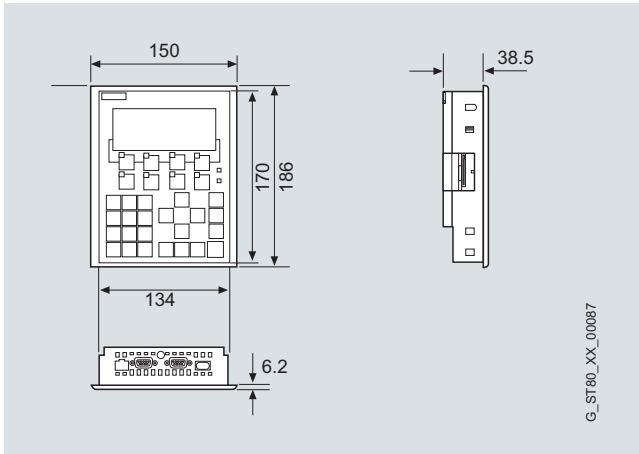
B: Subject to export regulations: AL: N and ECCN: EAR99S

E: Subject to export regulations: AL: 91999 and ECCN: 5D002ENCU



### Dimensional drawings

All specifications in mm. Panel cutout see technical specifications.



OP 77B

### More information

Additional information is available on the Internet at:

[www.siemens.com/simatic-panels](http://www.siemens.com/simatic-panels)

#### Note:

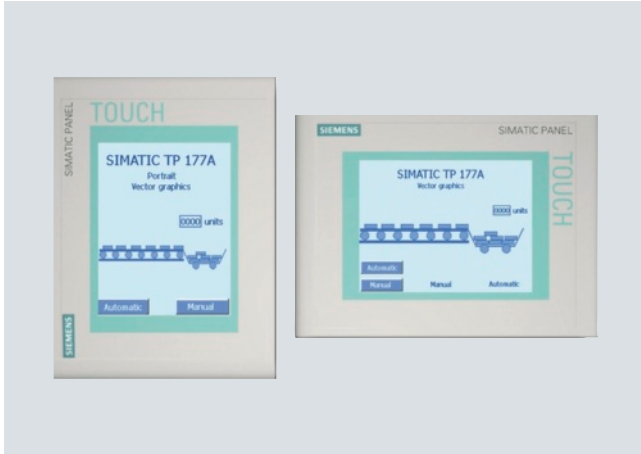
Do you require a specific modification or extension to the products described here? Under "Customized products", you can find information about additional and generally available products for the sector, and about the possibilities for customized modification and adaptation.

# Operator panels

## Panels –170 series

### SIMATIC TP 177A

#### Overview



- Touch Panel for operator control and monitoring of small machines and plants
- Low-cost entry-level product in the category of touch panels with graphics capability and all the basic functions required for simple tasks
- Pixel graphics 5.7" STN touch screen (analog/resistive), Blue mode (4 levels)
- All interfaces (e.g. MPI, PROFIBUS DP) are onboard
- SIMATIC TP 177A is the successor to the TP 170A Touch Panel

#### Benefits

- Can also be used in a vertical position where installation space is restricted
- Integral component of Totally Integrated Automation (TIA): Increased productivity, minimum engineering overhead, reduction in life-cycle costs
- Reduction of service and commissioning costs through:
  - Maintenance-free design (no battery) and long service life of the backlit display
- Graphic library available with off-the-shelf picture objects
- Can be used worldwide:
  - 32 languages can be configured (incl. Asian and Cyrillic character sets)
  - You can switch between up to 5 languages online
  - Language-dependent texts and graphics

#### Application

The TP 177A Touch Panels can be used wherever on-site operator control and monitoring of small machines and plants is required – in production automation, process automation and building automation. They may be used in all kinds of industries and applications.

With its fast response times, the TP 177A is also suitable for jog mode.

#### Compatible with TP 170A

- Same installation cutout as TP 170A
- Transfer of the TP 170A configurations from ProTool/Lite, ProTool to WinCC flexible
- Migration manual with descriptions of the essential changes to TP 170A or ProTool

#### Design

- 5.7" STN, CCFL<sup>1)</sup>-backlit display, Blue mode (4 shades of blue)
- Analog resistive Touch
- Numerical system keyboard for decimal, binary and hexadecimal number formats
- OnScreen alphabetic keyboard
- Compact design with low mounting depth
- Robust plastic housing
- The front is resistant to various oils, greases and standard detergents
- Plug-in terminals for 24 V DC power supply
- RS 485 interface for process connections (MPI, PROFIBUS DP up to 1.5 Mbit/s) and for the configuration download

<sup>1)</sup> Cold Cathode Fluorescence Lamps

### Function

- Templates concept for the creation of screen templates
- Input/output fields for displaying and changing process parameters
- Buttons are used for directly actuating functions and actions. Up to 16 functions can be configured simultaneously on buttons.
- Graphics can be used as icons instead of text to "label" function keys or buttons. They can also be used as background displays (wallpaper).  
In the configuration tool, a library is available containing extensive graphics and a wide variety of objects. All editors with an OLE interface can be used as graphic editors (such as PaintShop, Designer or CorelDraw).
- Vector graphics  
Simple geometric basic forms (line, circle and rectangle) can be created directly in the configuring tool
- Fixed texts for labeling function keys, process screens and process values in different font sizes
- Curve functions and bars are used for the display of dynamic values in graphic-based format
- Language selection:
  - 5 online languages, 32 configuration languages incl. Asian and Cyrillic character sets
  - Language-dependent texts and graphics
- User administration (security) according to the requirements of the various sectors
  - Authentication with user ID and password
  - User-group-specific rights
- Signaling system
  - Discrete alarms
  - Analog alarms
  - Freely-definable message classes (e.g. status/fault messages) for definition of acknowledgment response and display of alarm events
  - Message history
- Recipe management
- Help texts for process images, messages and variables
- Arithmetic functions
- Limit value monitoring for reliable process control of inputs and outputs
- Indicator light for machine and plant status indication
- Scheduler for cyclic function execution
- Template concept  
Creation of picture templates (display elements configured in the template appear in every image)
- Simple maintenance and configuration thanks to:
  - Backup and restoration of configuration, operating system and firmware on a PC using ProSave
  - Configuration download via MPI/PROFIBUS DP and serially via RS485
  - Automatic transfer identification
  - Individual contrast setting and calibration
  - Clean screen
  - No batteries are necessary

### Configuration

Configuration is performed using the SIMATIC WinCC flexible Compact, Standard or Advanced engineering software, Version 2004 SP1 plus HSP or higher, or with the SIMATIC WinCC Comfort or Professional engineering software, V11 or higher.

For more information about engineering software, see HMI software/engineering software SIMATIC WinCC flexible/WinCC (TIA Portal).

### Integration

The TP 177A can be connected to:

- SIMATIC S7-200/-300/-400
- SIMATIC WinAC Software/Slot PLC
- Non-Siemens controllers:
  - Allen Bradley
  - Mitsubishi
  - Modicon
  - Omron

### Note:

Further information can be found under "System interfaces".

### Technical specifications

6AV6 642-0AA11-0AX1 TP 177A	
<b>Product type designation</b>	
<b>Display</b>	
Size	5.7"
Display type	STN, 4 shades of blue
Resolution (pixels)	
• Resolution (WxH in pixel)	320 x 240
Backlighting	
• MTBF backlighting (at 25 °C)	about 50,000 hours
<b>Control elements</b>	
Control elements	Touch screen
Connection for mouse/keyboard/barcode reader	- / - / -
Keyboard	
• Numeric/alphabetical input	Yes / Yes
Touch operation	
• Touch screen	analog, resistive
<b>Supply voltage</b>	
Input voltage	
• permissible range	+20.4 V to +28.8 V DC
• Supply voltage	24 V DC
<b>Input current</b>	
Rated current	0.24 A
<b>Processor</b>	
Processor	ARM
<b>Memory</b>	
Type	Flash / RAM
<b>Type of output</b>	
LED colors	None

# Operator panels

## Panels –170 series

### SIMATIC TP 177A

#### Technical specifications (continued)

Product type designation	6AV6 642-0AA11-0AX1 TP 177A
<b>Time of day</b>	
Clock	
• Type	Software clock, no battery backup
<b>Interfaces</b>	
Interfaces	1 x RS422, 1 x RS485 (max. 1.5 Mbit/s)
USB port	No
PC card slot	No
CF card slot	No
Multi Media Card slot	No
Industrial Ethernet	
• Industrial Ethernet interface	No
<b>Ambient conditions</b>	
Operating temperature	
• Operation (vertical installation)	0 °C to +50 °C
• Operation (max. tilt angle)	0 °C to +40 °C
Storage/transport temperature	
• Transport, storage	-20 °C to +60 °C
Relative humidity	
• max. relative humidity	90 %
Mounting position	vertical
maximum permissible angle of inclination without external ventilation	+/- 35 °
<b>Degree and class of protection</b>	
Front	IP65, NEMA 4x, (when installed)
Rear	IP20
<b>Standards, approvals, certificates</b>	
Certifications	CE, GL, ABS, BV, DNV, LRS, FM Class I Div. 2, UL, CSA, cULus, EX-Zone 2 (in Vorbereitung), EX-Zone 22 (in Vorbereitung), C-TICK, NEMA 4x
<b>Operating systems</b>	
Operating system	LINUX
<b>Configuration</b>	
Configuration software	
• Configuration tool	see "Configuration overview" from page 2/3
<b>Functionality under WinCC flexible/WinCC (TIA Portal)</b>	
Number of Visual Basic Scripts	Not possible
Task planner	Yes
Help system	Yes
Status/control	Not possible
With alarm logging system (incl. buffer and acknowledgment)	
• Number of messages	1 000
• Bit messages	Yes
• Analog messages	Yes
• Message buffer	Ring buffer (n x 256 entries), non-retentive

Product type designation	6AV6 642-0AA11-0AX1 TP 177A
Recipes	
• Recipes	5
• Data records per recipe	20
• Entries per data record	20
• Recipe memory	32 KB integrated Flash
Number of process images	
• Process images	250
• Variables	500
• Limit values	Yes
• Multiplexing	Yes
Image elements	
• Text objects	1,000 text elements
• Graphic object	Bit maps, icons, icon (full-screen), vector graphics
• dynamic objects	Diagrams, bar graphs
Lists	
• Text lists	300
• Graphic list	100
• Libraries	Yes
Security	
• Number of user groups	50
• Passwords exportable	Yes
• Number of user rights	32
Data carrier support	
• PC card	No
• CF card	No
• Multimedia Card	No
Fonts	
• Keyboard fonts	US American (English)
Languages	
• Configuration languages	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H
• Character sets	Tahoma, WinCC flexible Standard, symbol languages, 1 additional character set can be loaded
Transfer (upload/download)	
• Transfer of configuration	MPI/PROFIBUS DP, serial, automatic transfer recognition
Process coupling	
• Connection to controller	see "System interfaces" from page 2/178
Expandability/openness	
• Open Platform Program	No
<b>Dimensions and weight</b>	
Dimensions	
• Front of enclosure (W x H)	212 mm x 156 mm
• Mounting cutout/device depth (W x H)	198 mm x 142 mm / 44 mm device depth
Weight	
• Weight	0.75 kg

Ordering data	Order No.	Order No.
<b>SIMATIC TP 177A</b> Touch Panel with 5.7" STN display, blue mode (4 levels), incl. mounting accessories <i>Configuration</i> • with SIMATIC WinCC flexible or with SIMATIC WinCC (TIA Portal)	<b>A 6AV6 642-0AA11-0AX1</b>  see HMI Software	<b>User Manual WinCC flexible Communication</b> • German • English • French • Italian • Spanish <b>6AV6 691-1CA01-3AA0</b> <b>6AV6 691-1CA01-3AB0</b> <b>6AV6 691-1CA01-3AC0</b> <b>6AV6 691-1CA01-3AD0</b> <b>6AV6 691-1CA01-3AE0</b>
<i>Documentation (to be ordered separately)</i> <b>Operating Instructions TP 177A, TP 177B, OP 177B</b> • German • English • French • Italian • Spanish	<b>6AV6 691-1DG01-0AA1</b> <b>6AV6 691-1DG01-0AB1</b> <b>6AV6 691-1DG01-0AC1</b> <b>6AV6 691-1DG01-0AD1</b> <b>6AV6 691-1DG01-0AE1</b>	<b>SIMATIC HMI Manual Collection B 6AV6 691-1SA01-0AX0</b> Electronic documentation, on DVD 5 languages (English, French, German, Italian and Spanish); contains: all currently available user manuals, manuals and communication manuals for SIMATIC HMI
<b>User Manual WinCC flexible Compact/Standard/Advanced</b> • German • English • French • Italian • Spanish	<b>6AV6 691-1AB01-3AA0</b> <b>6AV6 691-1AB01-3AB0</b> <b>6AV6 691-1AB01-3AC0</b> <b>6AV6 691-1AB01-3AD0</b> <b>6AV6 691-1AB01-3AE0</b>	<i>Accessories</i> see HMI accessories

A: Subject to export regulations: AL: N and ECCN: EAR99H

B: Subject to export regulations: AL: N and ECCN: EAR99S

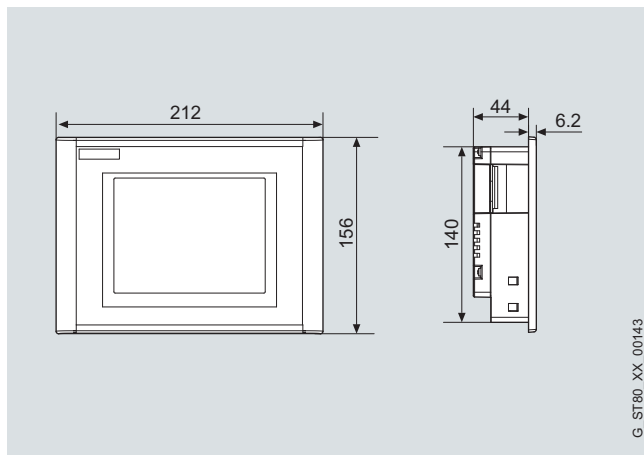
# Operator panels

## Panels –170 series

### SIMATIC TP 177A

#### Dimensional drawings

All specifications in mm. Panel cutout see technical specifications.



SIMATIC TP177A

#### More information

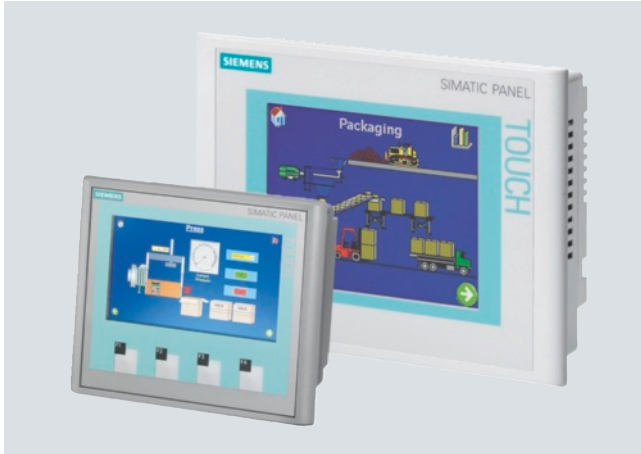
Additional information is available on the Internet at:

[www.siemens.com/simatic-panels](http://www.siemens.com/simatic-panels)

#### Note:

Do you require a specific modification or extension to the products described here? Under "Customized products", you can find information about additional and generally available products for the sector, and about the possibilities for customized modification and adaptation.

### Overview



- Touch Panel with extensive functions for operator control and monitoring of machines and plants
- Pixel-graphics display with analog touch screen
  - 4.3" TFT widescreen color display or
  - 5.7" STN blue mode/color display
- All interfaces for communication with Siemens SIMATIC S7 (e.g. MPI, PROFIBUS DP) are onboard
- The PROFINET interface is onboard in the color version
- Drivers are also available for non-Siemens PLCs
- Content of message buffer is retained even when panel is disconnected without batteries
- The 4" version features 4 additional function keys for optimized operator control efficiency
- The SIMATIC TP 177B 6" is the innovative successor to the TP 170B Touch Panel
- The TP 177B PN/DP is also available with a stainless steel front (EN 1672-2). The stainless steel front is also appropriate, for example, for the increased demands of the food and beverages industry.

### Benefits

- Reduction of service and commissioning costs through:
  - Backup/restore via a process interface or optionally via a Multimedia Card/SD Card (also possible using a USB flash drive on the 4" panel)
  - Image and configuration download via all device interfaces
  - Maintenance-free structure and long service life of the backlighting
 The data in the message buffer are retained even when the panel is disconnected from the supply, without battery backup.
- Can be used worldwide:
  - 32 languages can be configured (incl. Asian and Cyrillic character sets)
  - Online language can be selected directly on the device
- Graphic library available with off-the-shelf picture objects
- Standard interfaces for increasing flexibility:
  - External Multimedia Card/SD Card, can be used for recipe data records and for backup of configuration/system data; on the 4" panel, this is also possible using a USB flash drive
- Integrated USB interface for connecting, for example, standard printers
- Simple engineering supported by comprehensive documentation on the SIMATIC HMI Manual Collection DVD
- Integral component of Totally Integrated Automation (TIA): Increases productivity, minimizes engineering outlay, reduces lifecycle costs
- The panel versions with stainless steel front can be optimally used in the food and beverages and pharmaceutical industries. The front panels are designed for easy cleaning and disinfecting. Liquids flow off automatically from the front panels. In addition, the stainless steel front (including gasket) provides protection against contamination by foods.

### Application

Thanks to their practical functions and large user memory, TP 177B Touch Panels can be used wherever operator control and monitoring of machines and plants is necessary on site – whether in production automation, process automation or building-services automation.

The TP 177B is available in two display sizes: 4.3" TFT widescreen display with 256 colors or 5.7" STN display with 256 colors or 4 blue levels. The 4" version features four additional function keys for optimized operator control efficiency. The color versions with integrated PROFINET I/O interface can be implemented with even greater flexibility. A USB interface is standard on all model types. A further highlight is the non-volatile message buffer included as standard that stores messages permanently without battery backup.

# Operator panels

## Panels – 170 series

### SIMATIC TP 177B

#### Design

- Display versions
  - 4.3" TFT widescreen display with 256 colors or
  - 5.7" STN display with 256 colors or 4 blue levels
- LED or CCFL<sup>1)</sup> Backlighting with long service life
- Analog resistive touch screen
- Numeric and alphanumeric on-screen keyboard
- High performance thanks to RISC processor and 2 MB user memory, plus additional integrated recipe memory
- Data in the message buffer are retained even when panel is disconnected from the power supply, without batteries
- MPI, PROFIBUS DP interfaces (up to 12 Mbaud) as well as USB 1.1 (max. 100 mA) onboard
- PROFINET interface is already onboard in the color versions
- Configuration of the 6" version with SIMATIC WinCC flexible 2005 Compact or higher, the 4" version as of WinCC flexible 2008 Compact
- Complete functionality for demanding tasks
- Comprehensive Reichert graphic library
- Multimedia Card/SD card
  - can be used for standard Multimedia Cards or standard SD Cards (for backup/restoration or for backing up recipe data sets, the configuration, and system data); the 4" version also supports USB flash drives
- The SINUMERIK, Sm@rtAccess and Sm@rtService options can be used
- Service-friendly thanks to maintenance-free design and long service life of the backlighting display

<sup>1)</sup> Cold Cathode Fluorescence Lamps

#### Function

- Permanent window and template concept for creating screen templates
- Input/output fields
  - for visualizing and editing process parameters
- Configurable buttons
  - with up to 16 functions are also used to directly trigger functions and actions
- Indicator light
  - for machine and plant status indication
- Fixed texts
  - for labeling function keys, process images and process values in any character size
- Help texts
  - for process images, messages and variables
- Vector graphics, graphics
  - can be used as icons instead of text for "labeling" buttons. They can also be used as full-screen background pictures. In the configuration tool, a library is available containing extensive graphics and a wide variety of objects. All editors with an OLE interface (e.g., PaintShop, Designer or CorelDraw) can be used as graphic editors.

- Curve functions and bars
  - are used for the display of dynamic values in graphic-based format
- Dynamic positioning of objects and dynamic showing/hiding of objects
- Arithmetic functions, limit value monitoring
  - for reliable process control with inputs and outputs
- Online language selection with 5 selectable languages, incl. Asian and Cyrillic languages,
  - this also applies to language-specific graphics
- Scheduler
  - for cyclic function execution
- Password protection (security)
  - User management – Authentication by means of user ID and password, plus privileges specific to user groups, which is an integral part of SIMATIC
- Signaling system
  - Freely definable message classes (acknowledgement behavior and display can be configured). Administration of status, fault and system messages. The alarm history is retained even if the device is switched off. Analog alarms (limit value messages) in addition to discrete alarms.
- Recipe management:
  - With additional data storage (on ext. storage medium)
  - Online/offline processing on the panel
  - Storage of recipe data in standard Windows format (CSV)
  - External processing using standard tools such as Excel and Access is possible
- Multimedia Card/SD card compatibility
  - for external standard data carriers, can be used for backup/restoration or for transporting recipe data records; the 4" version also supports USB flash drives
- User-friendly maintenance and configuration thanks to:
  - Backup and restoration of the configuration, operating system, data records and firmware on a PC using ProSave
  - Option to download/upload the configuration via all device interfaces (with automatic transfer detection)
  - Individual contrast and brightness setting and calibration
  - Configuration simulation directly on the configuration computer

#### Configuration

The configuration is implemented using the innovative SIMATIC WinCC Comfort engineering tool. Projects generated using WinCC flexible can be easily migrated to WinCC.

#### Additional options

- Sm@rtServer
  - Remote control and monitoring of SIMATIC HMI systems based on TCP/IP networks



### Technical specifications

Product type designation	6AV6 642-0BD01-3AX0 TP 177B Widescreen	6AV6 642-0BC01-1AX1 TP 177 Blue mode	6AV6 642-0BA01-1AX1 TP 177B color
<b>Display</b>			
Size	4.3" (95 mm x 53 mm)	5.7" (120 mm x 90 mm)	5.7" (120 mm x 90 mm)
Display type	TFT, 256 colors	STN, 4 shades of blue	STN, 256 colors
Resolution (pixels)			
• Resolution (WxH in pixel)	480 x 272	320 x 240	320 x 240
Backlighting			
• MTBF backlighting (at 25 °C)	Approx. 30000 hours	about 50,000 hours	about 50,000 hours
<b>Control elements</b>			
Control elements	Membrane keyboard	Touch screen	Touch screen
Function keys, programmable	4 function keys		
Connection for mouse/keyboard/barcode reader	USB / USB / USB	USB / USB / USB	USB / USB / USB
Keyboard			
• Numeric/alphabetical input	Yes (on-screen keyboard) / Yes (on-screen keyboard)	Yes / Yes	Yes / Yes
Touch operation			
• Touch screen	analog, resistive	analog, resistive	analog, resistive
<b>Supply voltage</b>			
Input voltage			
• permissible range	+19.2 V to +28.8 V DC	+20.4 V to +28.8 V DC	+20.4 V to +28.8 V DC
• Supply voltage	24 V DC	24 V DC	24 V DC
<b>Input current</b>			
Rated current	0.2 A	0.24 A	0.24 A
<b>Processor</b>			
Processor	RISC 32-bit, 266 MHz	ARM, 200 MHz	ARM, 200 MHz
<b>Memory</b>			
Type	Flash / RAM	Flash / RAM	Flash / RAM
Usable memory for user data	2048 KB usable memory for user data	2048 KB usable memory for user data	2048 KB usable memory for user data
<b>Time of day</b>			
Clock			
• Type	Hardware clock, synchronizable, no battery backup	Hardware clock, synchronizable, no battery backup	Hardware clock, synchronizable, no battery backup
<b>Interfaces</b>			
USB port	1 x USB	1 x USB	1 x USB
PC card slot	No	No	No
CF card slot	No	No	No
Multimedia card	combined	combined	combined
Industrial Ethernet			
• Industrial Ethernet interface	1 x Ethernet (RJ45)	No	1 x Ethernet (RJ45)
<b>Protocols</b>			
Protocols (terminal link)			
• Sm@rtAccess	Yes	Yes	Yes
<b>Ambient conditions</b>			
Operating temperature			
• Operation (vertical installation)	0 °C to +50 °C	0 °C to +50 °C	0 °C to +50 °C
• Operation (max. tilt angle)	0 °C to +40 °C	0 °C to +40 °C	0 °C to +40 °C
Storage/transport temperature			
• Transport, storage	-20 °C to +60 °C	-20 °C to +60 °C	-20 °C to +60 °C
Relative humidity			
• max. relative humidity	90 %	90 %	90 %
Mounting position	vertical	vertical	vertical
maximum permissible angle of inclination without external ventilation	+/- 35 °	+/- 35 °	+/- 35 °

# Operator panels

## Panels – 170 series

### SIMATIC TP 177B

#### Technical specifications (continued)

Product type designation	6AV6 642-0BD01-3AX0 TP 177B Widescreen	6AV6 642-0BC01-1AX1 TP 177 Blue mode	6AV6 642-0BA01-1AX1 TP 177B color
<b>Degree and class of protection</b>			
Front	IP65, NEMA 4, NEMA 4x, NEMA 12 (when installed)	IP65, NEMA 4x, NEMA 12 (when installed)	IP65, NEMA 4x, NEMA 12 (when installed)
Rear	IP20	IP20	IP20
<b>Standards, approvals, certificates</b>			
Certifications	CE, GL, FM Class I Div. 2, cULus, C-TICK, NEMA 4, NEMA 4x, NEMA 12	CE, GL, ABS, BV, DNV, LRS, FM Class I Div. 2, UL, CSA, cULus, EX Zone 2, EX Zone 22, C-TICK, NEMA 4x, NEMA 12	CE, GL, ABS, BV, DNV, LRS, FM Class I Div. 2, UL, CSA, cULus, EX Zone 2, EX Zone 22, C-TICK, NEMA 4x, NEMA 12
<b>Operating systems</b>			
Operating system	Windows CE (Version 5)	Windows CE	Windows CE
<b>Configuration</b>			
Configuration software	see "Configuration overview" from page 2/3		
• Configuration tool			
<b>Functionality under WinCC flexible/WinCC (TIA Portal)</b>			
Applications/options	See chapter 4: HMI software/SIMATIC WinCC flexible options and SIMATIC WinCC (TIA portal) options		
Task planner	Yes	Yes	Yes
Help system	Yes	Yes	Yes
Status/control	with SIMATIC S7	with SIMATIC S7	with SIMATIC S7
With alarm logging system (incl. buffer and acknowledgment)			
• Number of messages	2 000	2 000	2 000
• Bit messages	Yes	Yes	Yes
• Analog messages	Yes	Yes	Yes
• Message buffer	Ring buffer (n x 256 entries), retentive, maintenance-free	Ring buffer (n x 256 entries), retentive, maintenance-free	Ring buffer (n x 256 entries), retentive, maintenance-free
Recipes			
• Recipes	100	100	100
• Data records per recipe	200	200	200
• Entries per data record	200	200	200
• Recipe memory	32 KB integrated Flash, expandable	32 KB integrated Flash, expandable	32 KB integrated Flash, expandable
Number of process images			
• Process images	500	500	500
• Variables	1 000	1 000	1 000
• Limit values	Yes	Yes	Yes
• Multiplexing	Yes	Yes	Yes
Image elements			
• Text objects	2,500 text elements	2,500 text elements	2,500 text elements
• Graphic object	Bit maps, icons, icon (full-screen), vector graphics	Bit maps, icons, icon (full-screen), vector graphics	Bit maps, icons, icon (full-screen), vector graphics
• dynamic objects	Diagrams, bar graphs, sliders, analog display, invisible buttons	Diagrams, bar graphs, sliders, analog display, invisible buttons	Diagrams, bar graphs, sliders, analog display, invisible buttons
Lists			
• Text lists	300	300	300
• Graphic list	100	100	100
• Libraries	Yes	Yes	Yes
Security			
• Number of user groups	50	50	50
• Passwords exportable	Yes	Yes	Yes
• Number of user rights	32	32	32
Data carrier support			
• PC card	No	No	No
• CF card	No	No	No
• Multimedia Card	Yes	Yes	Yes

**Technical specifications** (continued)

Product type designation	6AV6 642-0BD01-3AX0 TP 177B Widescreen	6AV6 642-0BC01-1AX1 TP 177 Blue mode	6AV6 642-0BA01-1AX1 TP 177B color
Recording			
• Recording/Printing	Alarms, report (shift report), color print, hardcopy	Alarms, report (shift report), hardcopy	Alarms, report (shift report), color print, hardcopy
• Printer driver	ESC/P2, PCL3/PCL6	ESC/P2, PCL3/PCL6	ESC/P2, PCL3/PCL6
Fonts			
• Keyboard fonts	US American (English)	US American (English)	US American (English)
Languages			
• Configuration languages	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H
• Character sets	Tahoma, WinCC flexible Standard, symbol languages, 1 additional character sets can be loaded, all freely scalable	Tahoma, Courier New, WinCC flexible Standard, symbol languages, 2 additional character sets can be loaded, all freely scalable	Tahoma, Courier New, WinCC flexible Standard, symbol languages, 2 additional character sets can be loaded, all freely scalable
Transfer (upload/download)			
• Transfer of configuration	MPI/PROFIBUS DP, serial, USB, Ethernet, by means of external storage medium, automatic transfer recognition	MPI/PROFIBUS DP, serial, USB, by means of external storage medium, automatic transfer recognition	MPI/PROFIBUS DP, serial, USB, Ethernet, by means of external storage medium, automatic transfer recognition
Process coupling			
• Connection to controller	see "System interfaces" from page 178		
Expandability/openness			
• Open Platform Program	Yes	Yes	Yes
I/O			
I/O devices	Printer	Printer	Printer
<b>Dimensions and weight</b>			
Dimensions			
• Front of enclosure (W x H)	140 mm x 116 mm	212 mm x 156 mm	212 mm x 156 mm
• Mounting cutout/device depth (W x H)	123 mm x 99 mm/48 mm device depth	198 mm x 142 mm / 44 mm device depth	198 mm x 142 mm / 44 mm device depth
Weight			
• Weight	0.5 kg; Max.	0.8 kg	0.8 kg

# Operator panels

## Panels – 170 series

### SIMATIC TP 177B

2

Ordering data	Order No.	Order No.
<b>SIMATIC TP 177B</b> Touch Panel with <ul style="list-style-type: none"> <li>• 4.3" TFT widescreen color display (256 colors)</li> <li>• 5.7" STN blue mode display (4 levels)</li> <li>• 5.7" STN color display (256 colors)</li> </ul> incl. mounting accessories	E <b>6AV6 642-0BD01-3AX0</b> E <b>6AV6 642-0BC01-1AX1</b> E <b>6AV6 642-0BA01-1AX1</b>	<b>Documentation</b> <i>(to be ordered separately)</i> <b>Operating Instructions</b> <b>TP 177micro/TP 177A/TP 177B/OP 177B (WinCC flexible)</b> <ul style="list-style-type: none"> <li>• German</li> <li>• English</li> <li>• French</li> <li>• Italian</li> <li>• Spanish</li> </ul> <b>User Manual</b> <b>WinCC flexible</b> <b>Compact/Standard/Advanced</b> <ul style="list-style-type: none"> <li>• German</li> <li>• English</li> <li>• French</li> <li>• Italian</li> <li>• Spanish</li> </ul> <b>User Manual</b> <b>WinCC flexible Communication</b> <ul style="list-style-type: none"> <li>• German</li> <li>• English</li> <li>• French</li> <li>• Italian</li> <li>• Spanish</li> </ul> <b>SIMATIC HMI Manual Collection B</b> Electronic documentation, on DVD 5 languages (English, French, German, Italian and Spanish); contains: all currently available user manuals, manuals and communication manuals for SIMATIC HMI
<b>TP 177B 4" starter kit</b> Consisting of: <ul style="list-style-type: none"> <li>• TP 177B with 4.3" TFT widescreen color display (256 colors)</li> <li>• SIMATIC WinCC flexible Compact configuration software</li> <li>• SIMATIC HMI Manual Collection (DVD), 5 languages (English, French, German, Italian, Spanish)</li> <li>• MPI cable (5 m) (for download and test purposes only)</li> </ul>	E <b>6AV6 652-2KA00-0AA0</b>	6AV6 691-1DG01-0AA1 6AV6 691-1DG01-0AB1 6AV6 691-1DG01-0AC1 6AV6 691-1DG01-0AD1 6AV6 691-1DG01-0AE1
<b>TP 177B 6" starter kit</b> Consisting of: <ul style="list-style-type: none"> <li>• TP 177B with 5.7" STN color display (256 colors)</li> <li>• Configuration software SIMATIC WinCC flexible Compact</li> <li>• SIMATIC HMI Manual Collection (DVD), 5 languages (English, French, German, Italian, Spanish)</li> <li>• MPI cable (5 m) (for download and test purposes only), PC/PPI cable</li> </ul>	E <b>6AV6 551-2EA01-1AA0</b>	6AV6 691-1AB01-3AA0 6AV6 691-1AB01-3AB0 6AV6 691-1AB01-3AC0 6AV6 691-1AB01-3AD0 6AV6 691-1AB01-3AE0
<b>Configuration software</b> <ul style="list-style-type: none"> <li>• With SIMATIC WinCC flexible or SIMATIC WinCC</li> </ul>	see HMI software	<b>Accessories</b> see HMI accessories
<b>Configuration set</b> Consisting of: <ul style="list-style-type: none"> <li>• SIMATIC WinCC flexible Compact engineering software, SIMATIC HMI Manual Collection (DVD), 5 languages (English, French, German, Italian and Spanish), PC/PPI cable Multi-master, MPI cable (5 m) (for download and test purposes only)</li> <li>• with SIMATIC WinCC flexible Compact engineering software</li> </ul>	D <b>6AV6 621-0AA01-0AA0</b>	

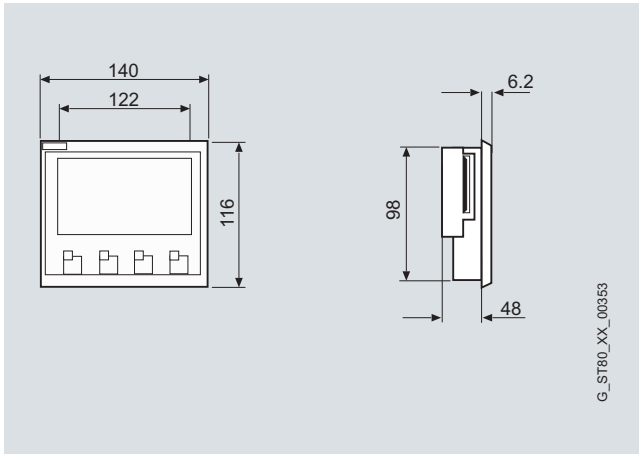
B: Subject to export regulations: AL: N and ECCN: EAR99S

D: Subject to export regulations: AL: N and ECCN: 5D992

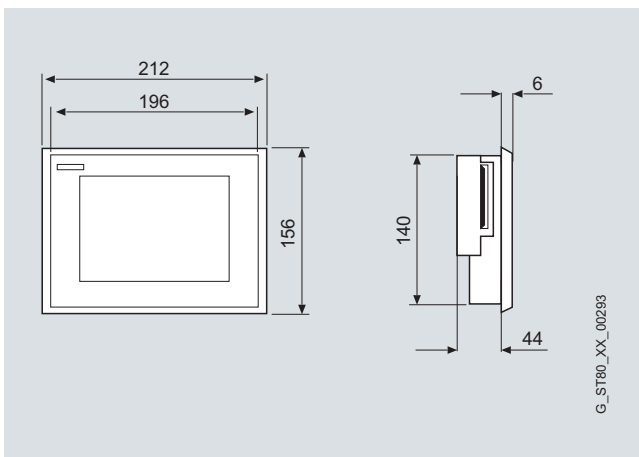
E: Subject to export regulations: AL: 91999 and ECCN: 5D002ENCU

### Dimensional drawings

All specifications in mm. Panel cutout see technical specifications.



SIMATIC TP 177B, 4" version



SIMATIC TP 177B PN/DP and DP, 6" versions

### More information

Additional information is available on the Internet at:

[www.siemens.com/simatic-panels](http://www.siemens.com/simatic-panels)

#### Note:

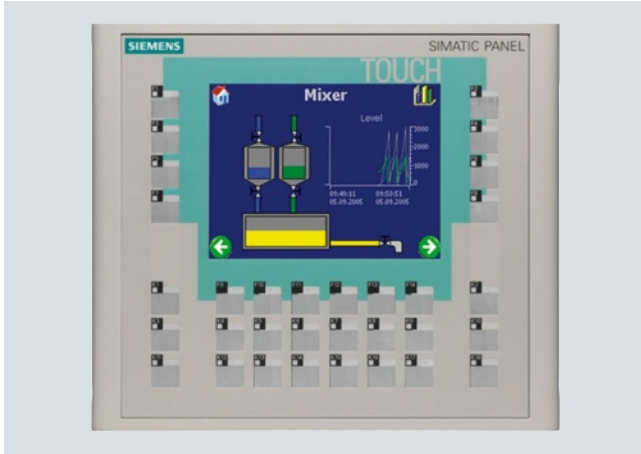
Do you require a specific modification or extension to the products described here? Under "Customized products", you can find information about additional and generally available products for the sector, and about the possibilities for customized modification and adaptation.

# Operator panels

## Panels – 170 series

### SIMATIC OP 177B

#### Overview



- Touch/Key Panel with extensive functions for operator control and monitoring of machines and plants
- Content of message buffer is retained even when panel is disconnected, without batteries
- Pixel-graphics STN blue-mode/color display with analog touch screen and additional 32 function keys
- Interfaces for communication with Siemens SIMATIC S7 (e.g. MPI, PROFIBUS DP) are onboard
- Ethernet is onboard in the color version
- Drivers are also available for non-Siemens PLCs
- Installation compatible with OP17

#### Benefits

- Reduction of service and commissioning costs through:
  - Backup/restoration via a process interface or optionally via a Multimedia Card/SD Card
  - Remote downloading of the configuration with automatic transfer recognition via all device interfaces
  - Maintenance-free design (no battery) and long service life of the backlighting
  - System keys that can be assigned to any function keys and used as an alternative to or in parallel with the on-screen keyboard
- Maintenance-free message buffer
- Can be used worldwide:
  - 32 languages can be configured (incl. Asian and Cyrillic character sets)
  - Online language can be selected directly on the device
- Language-dependent texts and graphics
- Graphic library available with off-the-shelf picture objects
- Standard interfaces for increasing the flexibility:
  - External Multimedia Card/SD Card, used for recipe data sets and for backup of the configuration/system data
- Integrated USB interface for connecting, for example, standard printers
- Simple engineering supported by comprehensive documentation on the SIMATIC HMI Manual Collection DVD
- Integral component of Totally Integrated Automation (TIA):
  - Increases productivity, minimizes engineering outlay, reduces lifecycle costs

#### Application

Thanks to their practical functions and large user memory, OP 177B Operator Panels can be used wherever operator control and monitoring of machines and plants is necessary on site – whether in production automation, process automation or building-services automation.

The OP 177B is available with a 4-color blue mode display or a 256-color STN display. The color version complete with an integrated PROFINET I/O interface can be implemented with even greater flexibility. A USB port is standard on both model types. A further highlight is the non-volatile message buffer included as standard that stores messages permanently without battery backup.

### Design

- 256 colors with color display or 4 blue-mode monochrome STN display
- CCFL<sup>1)</sup> Backlighting with long service life
- Analog resistive touch screen and membrane keyboard with 32 function keys
- Numeric and alphanumeric on-screen keyboard
- High performance thanks to RISC processor and 2 MB user memory, plus additional integrated recipe memory
- The data in the message buffer are retained even when panel is disconnected from the power supply, without batteries
- MPI, PROFIBUS DP interfaces (up to 12 Mbaud) as well as USB 1.1 (max. 100 mA) onboard
- Ethernet (PROFINET I/O-capable) with the color version
- Integrated USB interface
- Can be configured using SIMATIC WinCC flexible 2005 Compact and higher
- Complete functionality for demanding tasks
- Comprehensive Reichert graphic library
- Multimedia Card/SD Card slot  
Multimedia Cards or Standard SD Cards, can be used for standard Multimedia Cards (for backing up recipe data sets, the configuration, and system data)
- Remote downloading of the configuration via all interfaces with automatic transfer recognition
- The SINUMERIK, Sm@rtAccess and Sm@rtService options can be used
- Service-friendly thanks to maintenance-free design and long service life of the backlighting display

<sup>1)</sup> Cold Cathode Fluorescence Lamps

### Function

- Permanent window and template concept for creating screen templates
- Input/output fields  
for visualizing and editing process parameters
- Configurable buttons  
with up to 16 functions are also used to directly trigger functions and actions
- Indicator light  
for machine and plant status indication
- Fixed texts  
for labeling function keys, process images and process values in any character size
- Help texts  
for process displays, messages, and variables
- Vector graphics, graphics  
can be used as icons instead of text for "labeling" buttons. They can also be used as full-screen background images. The configuration tool contains a library with extensive graphics and diverse objects. All editors with an OLE interface can be used as graphic editors (such as PaintShop, Designer or CorelDraw).

- Curve functions and bars  
are used for the display of dynamic values in graphic-based format
- Dynamic positioning of objects and dynamic showing/hiding of objects
- Arithmetic functions, limit value monitoring  
for reliable process control with inputs and outputs
- Online language selection with 5 selectable languages, incl. Asian and Cyrillic languages  
this also applies to language-specific graphics
- Scheduler  
for cyclic function execution
- Password protection (security)  
User management – Authentication by means of user ID and password, plus privileges specific to user groups, which is an integral part of SIMATIC
- Signaling system;  
Freely definable message classes (acknowledgement behavior and display can be configured), administration of status, fault and system alarms. The message history is retained even if the device is switched off.  
Analog alarms (limit value messages) in addition to bit messages
- Recipe management
  - With additional data storage (on ext. storage medium)
  - Online/offline processing on the panel
  - Storage of recipe data in standard Windows format (CSV)
  - External processing using standard tools such as Excel and Access is possible
- Multimedia Card/SD Card compatibility  
for external standard data carriers, can be used for backup/restoration or for transporting recipe data records
- User-friendly maintenance and configuration thanks to:
  - backup and restoration of the configuration, operating system, data records and firmware on a PC using ProSave
  - Option to download/upload the configuration via all device interfaces (with automatic transfer detection)
  - Individual contrast setting and calibration
  - Configuration simulation directly on the configuration computer

### Configuration

The configuration is implemented using the innovative SIMATIC WinCC Comfort engineering tool. Projects generated using WinCC flexible can be easily migrated to WinCC.

### Additional options

- Sm@rtServer  
Remote control and monitoring of SIMATIC HMI systems based on TCP/IP networks

# Operator panels

## Panels – 170 series

### SIMATIC OP 177B

#### Technical specifications

Product type designation	6AV6 642-0DC01-1AX1 OP 177B blue mode	6AV6 642-0DA01-1AX1 OP 177B color
<b>Display</b>		
Size	5.7" (120 mm x 90 mm)	5.7" (120 mm x 90 mm)
Display type	STN, 4 shades of blue	STN, 256 colors
Resolution (pixels)		
• Resolution (WxH in pixel)	320 x 240	320 x 240
Backlighting		
• MTBF backlighting (at 25 °C)	about 50,000 hours	about 50,000 hours
<b>Control elements</b>		
Control elements	Membrane keyboard	Membrane keyboard
Function keys, programmable	32 function keys, 26 with LEDs	32 function keys, 26 with LEDs
Connection for mouse/keyboard/barcode reader	USB / USB / USB	USB / USB / USB
Keyboard		
• Numeric/alphabetical input	Yes / Yes	Yes / Yes
Touch operation		
• Touch screen	analog, resistive	analog, resistive
<b>Supply voltage</b>		
Input voltage		
• permissible range	+20.4 V to +28.8 V DC	+20.4 V to +28.8 V DC
• Supply voltage	24 V DC	24 V DC
<b>Input current</b>		
Rated current	0.24 A	0.24 A
<b>Processor</b>		
Processor	ARM, 200 MHz	ARM, 200 MHz
<b>Memory</b>		
Type	Flash / RAM	Flash / RAM
Usable memory for user data	2048 KB usable memory for user data	2048 KB usable memory for user data
<b>Type of output</b>		
LED colors	Green	Green
<b>Time of day</b>		
Clock		
• Type	Hardware clock, synchronizable, no battery backup	Hardware clock, synchronizable, no battery backup
<b>Interfaces</b>		
USB port	1 x USB	1 x USB
PC card slot	No	No
CF card slot	No	No
Multimedia card	combined	combined
Industrial Ethernet		
• Industrial Ethernet interface	No	1 x Ethernet (RJ45)
<b>Protocols</b>		
Protocols (terminal link)		
• Sm@rtAccess	Yes	Yes

Product type designation	6AV6 642-0DC01-1AX1 OP 177B blue mode	6AV6 642-0DA01-1AX1 OP 177B color
<b>Ambient conditions</b>		
Operating temperature		
• Operation (vertical installation)	0 °C to +50 °C	0 °C to +50 °C
• Operation (max. tilt angle)	0 °C to +40 °C	0 °C to +40 °C
Storage/transport temperature		
• Transport, storage	-20 °C to +60 °C	-20 °C to +60 °C
Relative humidity		
• max. relative humidity	90 %	90 %
Mounting position	vertical	vertical
maximum permissible angle of inclination without external ventilation	+/- 35 °	+/- 35 °
<b>Degree and class of protection</b>		
Front	IP65, NEMA 4x, NEMA 12 (when installed)	IP65, NEMA 4x, NEMA 12 (when installed)
Rear	IP20	IP20
<b>Standards, approvals, certificates</b>		
Certifications	CE, GL, ABS, BV, DNV, LRS, FM Class I Div. 2, UL, CSA, cULus, EX Zone 2, EX Zone 22, C-TICK, NEMA 4x, NEMA 12	CE, GL, ABS, BV, DNV, LRS, FM Class I Div. 2, UL, CSA, cULus, EX Zone 2, EX Zone 22, C-TICK, NEMA 4x, NEMA 12
<b>Operating systems</b>		
Operating system	Windows CE	Windows CE
<b>Configuration</b>		
Configuration software		
• Configuration tool	see "Configuration overview" from page 2/3	
<b>Functionality under WinCC flexible/WinCC (TIA portal)</b>		
Applications/options	See chapter 4: HMI software/SIMATIC WinCC flexible options and SIMATIC WinCC (TIA portal) options	
Task planner	Yes	Yes
Help system	Yes	Yes
Status/control	with SIMATIC S7	with SIMATIC S7
With alarm logging system (incl. buffer and acknowledgment)		
• Number of messages	2 000	2 000
• Bit messages	Yes	Yes
• Analog messages	Yes	Yes
• Message buffer	Ring buffer (n x 256 entries), retentive, maintenance-free	Ring buffer (n x 256 entries), retentive, maintenance-free



### Technical specifications (continued)

Product type designation	6AV6 642-0DC01-1AX1 OP 177B blue mode	6AV6 642-0DA01-1AX1 OP 177B color
Recipes		
• Recipes	100	100
• Data records per recipe	200	200
• Entries per data record	200	200
• Recipe memory	32 KB integrated Flash, expandable	32 KB integrated Flash, expandable
Number of process images		
• Process images	500	500
• Variables	1 000	1 000
• Limit values	Yes	Yes
• Multiplexing	Yes	Yes
Image elements		
• Text objects	2,500 text elements	2,500 text elements
• Graphic object	Bit maps, icons, icon (full-screen), vector graphics	Bit maps, icons, icon (full-screen), vector graphics
• dynamic objects	Diagrams, bar graphs, sliders, analog display, invisible buttons	Diagrams, bar graphs, sliders, analog display, invisible buttons
Lists		
• Text lists	300	300
• Graphic list	100	100
• Libraries	Yes	Yes
Security		
• Number of user groups	50	50
• Passwords exportable	Yes	Yes
• Number of user rights	32	32
Data carrier support		
• PC card	No	No
• CF card	No	No
• Multimedia Card	Yes	Yes
Recording		
• Recording/Printing	Alarms, report (shift report), hardcopy	Alarms, report (shift report), color print, hardcopy
• Printer driver	ESC/P2, PCL3/PCL6	ESC/P2, PCL3/PCL6
Fonts		
• Keyboard fonts	US American (English)	US American (English)

Product type designation	6AV6 642-0DC01-1AX1 OP 177B blue mode	6AV6 642-0DA01-1AX1 OP 177B color
Languages		
• Configuration languages	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H
• Character sets	Tahoma, Courier New, WinCC flexible Standard, symbol languages, 2 additional character sets can be loaded, all freely scalable	Tahoma, Courier New, WinCC flexible Standard, symbol languages, 2 additional character sets can be loaded, all freely scalable
Transfer (upload/download)		
• Transfer of configuration	MPI/PROFIBUS DP, serial, USB, by means of external storage medium, automatic transfer recognition	MPI/PROFIBUS DP, serial, USB, Ethernet, by means of external storage medium, automatic transfer recognition
Process coupling		
• Connection to controller	see "System interfaces" from page 2/178	
Expandability/openness		
• Open Platform Program	Yes	Yes
I/O		
I/O devices	Printer	Printer
Dimensions and weight		
Dimensions		
• Front of enclosure (W x H)	243 mm x 212 mm	243 mm x 212 mm
• Mounting cutout/device depth (W x H)	229 mm x 196 mm / 45 mm device depth	229 mm x 196 mm / 45 mm device depth
Weight		
• Weight	1 kg	1 kg

# Operator panels

## Panels – 170 series

### SIMATIC OP 177B

#### Ordering data

##### SIMATIC OP 177B

Operator panel with 5.7" STN display,

- Blue mode (4 levels)
- Color (256 colors)

incl. mounting accessories

##### OP 177B starter kit

Consisting of:

- OP 177B with STN display, color

- Configuration software SIMATIC WinCC flexible Compact
- SIMATIC HMI Manual Collection (DVD), 5 languages (English, French, German, Italian, Spanish)
- MPI cable (5 m) (for download and test purposes only), PC/PPI cable

##### Configuration software

- With SIMATIC WinCC flexible Compact or SIMATIC WinCC

##### Configuration set

Consisting of:  
SIMATIC WinCC flexible Compact engineering software, SIMATIC HMI Manual Collection (DVD), 5 languages (English, French, German, Italian and Spanish), PC/PPI cable Multimaster, MPI cable (5 m) (for download and test purposes only)

#### Order No.

6AV6 642-0DC01-1AX1

6AV6 642-0DA01-1AX1

6AV6 551-2HA01-1AA0

see HMI software

6AV6 621-0AA01-0AA0

#### Order No.

##### Documentation (to be ordered separately)

##### Operating Instructions TP 177micro/TP 177A/TP 177B/ OP 177B (WinCC flexible)

- German
- English
- French
- Italian
- Spanish

6AV6 691-1DG01-0AA1  
6AV6 691-1DG01-0AB1  
6AV6 691-1DG01-0AC1  
6AV6 691-1DG01-0AD1  
6AV6 691-1DG01-0AE1

##### User Manual WinCC flexible Compact/Standard/Advanced

- German
- English
- French
- Italian
- Spanish

6AV6 691-1AB01-3AA0  
6AV6 691-1AB01-3AB0  
6AV6 691-1AB01-3AC0  
6AV6 691-1AB01-3AD0  
6AV6 691-1AB01-3AE0

##### User Manual WinCC flexible Communication

- German
- English
- French
- Italian
- Spanish

6AV6 691-1CA01-3AA0  
6AV6 691-1CA01-3AB0  
6AV6 691-1CA01-3AC0  
6AV6 691-1CA01-3AD0  
6AV6 691-1CA01-3AE0

##### SIMATIC HMI Manual Collection B

Electronic documentation, on DVD

5 languages (English, French, German, Italian and Spanish); contains: all currently available user manuals, manuals and communication manuals for SIMATIC HMI

6AV6 691-1SA01-0AX0

##### Accessories

see HMI accessories

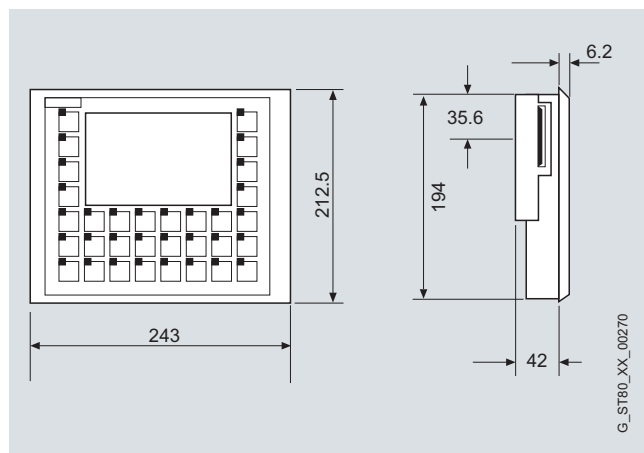
B: Subject to export regulations: AL: N and ECCN: EAR99S

D: Subject to export regulations: AL: N and ECCN: 5D992

E: Subject to export regulations: AL: 9I999 and ECCN: 5D002ENCU

#### Dimensional drawings

All specifications in mm. Panel cutout see technical specifications.



OP 177B

#### More information

Additional information is available on the Internet at:

[www.siemens.com/simatic-panels](http://www.siemens.com/simatic-panels)

##### Note:

Do you require a specific modification or extension to the products described here? Under "Customized products", you can find information about additional and generally available products for the sector, and about the possibilities for customized modification and adaptation.

### Overview



- Touch Panel with extensive functions for operator control and monitoring of machines and plants
- Content of message buffer is retained even when panel is disconnected, without batteries
- Pixel graphics TFT display with 256 colors and touchscreen
- Interfaces for communication with Siemens SIMATIC S7 (e.g. MPI, PROFIBUS DP) are onboard
- Ethernet onboard
- Use of scripts and archives
- Drivers are also available for non-Siemens PLCs
- Installation-compatible with TP 270 6" and MP 270B 6"

### Benefits

- Reduction of service and commissioning costs through:
  - Backup/restoration via a process interface or optionally via a Multi Media Card
  - Remote downloading of the configuration with automatic transfer recognition via all device interfaces
  - Maintenance-free design (no battery) and long service life of the backlighting
- Maintenance-free message buffer
- Use of scripts and archives
- Can be used world-wide:
  - 32 offline languages can be configured (incl. Asian and Cyrillic character sets)
  - 16 online languages can be selected directly on the device
- Graphic library available with off-the-shelf picture objects
- Standard interfaces for increasing the flexibility:
  - External multimedia card, used for recipe data sets, archive and for backup of configuration/system data
- Integrated USB interface for connecting, for example, standard printers
- Simple engineering supported by comprehensive documentation on the SIMATIC HMI Manual Collection DVD
- Integral component of Totally Integrated Automation (TIA): Increases productivity, minimizes engineering outlay, reduces lifecycle costs

### Application

Thanks to their practical functions and large user memory, the TP 277 6" Touch Panels can be used wherever operator control and monitoring of machines and plants is necessary on site – whether in production automation, process automation or building-services automation. The TP 277 6" offers a 256-color TFT display. The unit has an integrated PROFINET I/O interface for even greater flexibility. A further highlight is the non-volatile message buffer included as standard that stores messages permanently without battery backup.

# Operator panels

## Panels – 270 series

### SIMATIC TP 277 6"

#### Design

- 256-color TFT display
- CCFL<sup>1)</sup> Long-life backlighting
- Analog resistive touch screen
- Numeric and alphanumeric on-screen keyboard
- Scripts and archives
- High performance thanks to RISC processor and 4 MB user memory, plus additional integrated recipe memory
- The data in the message buffer is retained even when the panel is disconnected from the supply, without battery backup
- MPI, PROFIBUS DP interfaces (up to 12 Mbaud) as well as USB 1.1 (max. 100 mA) onboard
- Ethernet (PROFINET I/O capable)
- Integrated USB interface
- Can be configured using SIMATIC WinCC flexible 2005 Standard SP1
- Complete functionality for demanding tasks
- Comprehensive Reichert graphic library
- 32 languages (e.g., Cyrillic, traditional Chinese, simplified Chinese) and online switching between up to 16 languages
- Multi Media Card slot, can be used for standard Multi Media Cards (for backing up archives and recipe data sets, the configuration and system data)
- Remote downloading of the configuration via all interfaces with automatic transfer recognition
- Options for SINUMERIK, Sm@rtAccess and Sm@rtService can be used
- Service-friendly thanks to maintenance-free design and long service life of the backlighting display

<sup>1)</sup> Cold Cathode Fluorescence Lamps

#### Function

- Permanent window and template concept for creating screen templates
- Input/output fields for visualizing and editing process parameters
- Configurable buttons with up to 16 functions are also used to directly trigger functions and actions
- Indicator light for machine and plant status indication
- Fixed texts for labeling function keys, process images and process values in any character size
- Help texts for process displays, messages, and variables
- Vector graphics, graphics can be used as icons instead of text for "labeling" buttons. They can also be used as full-screen background images. The configuration tool contains a library with extensive graphics and diverse objects. All editors with an OLE interface can be used as graphic editors (such as PaintShop, Designer or CorelDraw).
- Curve functions and bars are used for the display of dynamic values in graphic-based format

- Dynamic positioning of objects and dynamic showing/hiding of objects
- Arithmetic functions, limit value monitoring for reliable process control with inputs and outputs
- Online language selection (16 selectable languages), incl. Asian and Cyrillic languages  
This also applies to language-specific graphics
- Timer for cyclic function processing
- Password protection (security)  
User management – Authentication by means of user ID and password plus privileges specific to user groups, which is an integral part of SIMATIC
- Signaling system;  
Freely definable message classes (acknowledgement behavior and display can be configured), administration of status, fault and system alarms. The message history is retained even if the device is switched off.  
Analog alarms (limit value messages) in addition to bit messages
- Visual Basic Script, flexibility thanks to the implementation of new functions including linking to variables (comparison operations, loops, etc.)
- Archiving of messages and process values (on MultiMedia card or network drives over Ethernet)
  - Various archive types: Circulating and sequence archive
  - Storage of archive data in standard Windows format (CSV)
  - Online evaluation of process value archives through trend curves
  - External processing using standard tools (MS Excel and MS Access) is possible
- Recipe management
  - With additional data storage (on ext. storage medium)
  - Online/offline processing on the panel
  - Storage of recipe data in standard Windows format (CSV)
  - External processing using standard tools such as Excel and Access is possible
- Multi Media Card slot for external standard data carrier, can be used for backup/restoration or for transporting recipe data records
- User-friendly maintenance and configuration thanks to:
  - Backup and restoration of the configuration, operating system, data records and firmware on a PC using ProSave
  - Option to download/upload the configuration via all device interfaces (with automatic transfer detection)
  - Individual contrast setting and calibration
  - Configuration simulation directly on the configuration computer

#### Configuration

The configuration is implemented using the innovative SIMATIC WinCC Comfort engineering tool. Projects generated using WinCC flexible can be easily migrated to WinCC.

#### Additional options

- Sm@rtServer  
Remote control and monitoring of SIMATIC HMI systems based on TCP/IP networks

### Technical specifications

Product type designation	6AV6 643-0AA01-1AX0 TP 277 6"
<b>Display</b>	
Size	5.7"
Display type	TFT, 256 colors
Resolution (pixels)	
• Resolution (WxH in pixel)	320 x 240
Backlighting	
• MTBF backlighting (at 25 °C)	about 60,000 hours
<b>Control elements</b>	
Control elements	Touch screen
Connection for mouse/keyboard/barcode reader	USB / USB / USB
Keyboard	
• Numeric/alphabetical input	Yes / Yes
Touch operation	
• Touch screen	analog, resistive
<b>Supply voltage</b>	
Input voltage	
• permissible range	+20.4 V to +28.8 V DC
• Supply voltage	24 V DC
<b>Processor</b>	
Processor	RISC 32-bit
<b>Memory</b>	
Type	Flash / RAM
Usable memory for user data	4 MB usable memory for user data
<b>Time of day</b>	
Clock	
• Type	Software clock, synchronizable, no battery backup
<b>Interfaces</b>	
Interfaces	1 x RS422, 1 x RS485, 1 x Ethernet (RJ45)
USB port	1 x USB
Multi Media Card slot	1 x Multi Media Card slot
Industrial Ethernet	
• Industrial Ethernet interface	1 x Ethernet (RJ45)
<b>Ambient conditions</b>	
Operating temperature	
• Operation	0 °C to +50 °C
Storage/transport temperature	
• Transport, storage	-20 °C to +60 °C
Relative humidity	
• max. relative humidity	80 %
Mounting position	vertical
<b>Degree and class of protection</b>	
Front	IP65, NEMA 4x, (when installed)
Rear	IP20

Product type designation	6AV6 643-0AA01-1AX0 TP 277 6"
<b>Standards, approvals, certificates</b>	
Certifications	CE, UL, NEMA 4x
<b>Operating systems</b>	
Operating system	Windows CE
<b>Configuration</b>	
Configuration software	
• Configuration tool	see "Configuration overview" from page 2/3
<b>Functionality under WinCC flexible/WinCC (TIA portal)</b>	
Applications/options	See chapter 4: HMI software/SIMATIC WinCC flexible options and SIMATIC WinCC (TIA portal) options
Number of Visual Basic Scripts	50
Task planner	Yes
Help system	Yes
Status/control	with SIMATIC S7
With alarm logging system (incl. buffer and acknowledgment)	
• Number of messages	4 000
• Bit messages	Yes
• Analog messages	Yes
• Message buffer	Ring buffer (n x 512 entries), retentive, maintenance-free
Recipes	
• Recipes	300
• Data records per recipe	500
• Entries per data record	1000
• Recipe memory	64 KB integrated Flash, expandable (using optional memory card)
Number of process images	
• Process images	500
• Variables	2 048
• Limit values	Yes
• Multiplexing	Yes
Image elements	
• Text objects	10,000 text elements
• Graphic object	Bit maps, icons, vector graphics
• dynamic objects	Diagrams, bar graphs, sliders, analog display, invisible buttons
Lists	
• Text lists	500
• Graphic list	400
• Libraries	Yes
Archiving	
• Number of archives per project	20
• Number of measuring points per project	20
• Number of entries per archive	10 000
• Memory location	Multi Media Card

# Operator panels

## Panels – 270 series

### SIMATIC TP 277 6"

#### Technical specifications (continued)

<b>Product type designation</b>	<b>6AV6 643-0AA01-1AX0 TP 277 6"</b>
Security	
• Number of user groups	50
• Passwords exportable	Yes
• Number of user rights	32
Data carrier support	
• Multimedia Card	Yes
Recording	
• Recording/Printing	Alarms, report (shift report), color print, hardcopy
Fonts	
• Keyboard fonts	US American (English)
Languages	
• Configuration languages	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H
• Character sets	Tahoma, Arial, Courier New, WinCC flexible Standard, symbol languages, all freely scalable
Transfer (upload/download)	
• Transfer of configuration	MPI/PROFIBUS DP, USB, Ethernet, automatic transfer recognition
Process coupling	
• Connection to controller	see "System interfaces" from page 2/178
Expandability/openness	
• Open Platform Program	Yes
<b>I/O</b>	
I/O devices	Printer, barcode reader
<b>Dimensions and weight</b>	
Dimensions	
• Front of enclosure (W x H)	212 mm x 156 mm
• Mounting cutout/device depth (W x H)	197 mm x 141 mm / 45 mm device depth
Weight	
• Weight	0.78 kg

#### Ordering data

#### Order No.

<b>SIMATIC TP 277 6"</b>	E	<b>6AV6 643-0AA01-1AX0</b>
Touch Panel with 5.7" TFT display, color (256 colors), incl. mounting accessories		
<b>Configuration</b>		
With SIMATIC WinCC flexible or SIMATIC WinCC		see HMI Software
<b>Configuration set</b>	D	<b>6AV6 622-0BA01-0AA0</b>
Consisting of:		
• WinCC flexible Standard engineering software		
• Documentation DVD, 5 languages (English, French, German, Italian, Spanish)		
• RS 232 cable (5 m)		
• MPI cable, 5 m (for download and test purposes only)		
<b>Applications/Options</b>		
For configuration with WinCC flexible		see HMI Software
• WinCC flexible /Sm@rtAccess		see HMI Software
• WinCC flexible /Sm@rtService		see HMI Software
• WinCC flexible /ProAgent		see HMI Software
<b>Documentation (to be ordered separately)</b>		
<b>TP 277 / OP 277 Operating Instructions</b>		
• German		<b>6AV6 691-1DH01-0AA0</b>
• English		<b>6AV6 691-1DH01-0AB0</b>
• French		<b>6AV6 691-1DH01-0AC0</b>
• Italian		<b>6AV6 691-1DH01-0AD0</b>
• Spanish		<b>6AV6 691-1DH01-0AE0</b>
<b>WinCC flexible Compact/Standard/Advanced User Manual</b>		
• German		<b>6AV6 691-1AB01-3AA0</b>
• English		<b>6AV6 691-1AB01-3AB0</b>
• French		<b>6AV6 691-1AB01-3AC0</b>
• Italian		<b>6AV6 691-1AB01-3AD0</b>
• Spanish		<b>6AV6 691-1AB01-3AE0</b>
<b>WinCC flexible Communication User Manual</b>		
• German		<b>6AV6 691-1CA01-3AA0</b>
• English		<b>6AV6 691-1CA01-3AB0</b>
• French		<b>6AV6 691-1CA01-3AC0</b>
• Italian		<b>6AV6 691-1CA01-3AD0</b>
• Spanish		<b>6AV6 691-1CA01-3AE0</b>
<b>SIMATIC HMI Manual Collection</b>	B	<b>6AV6 691-1SA01-0AX0</b>
Electronic documentation, on DVD		
5 languages (English, French, German, Italian and Spanish); contains: all currently available user manuals, manuals and communication manuals for SIMATIC HMI		
<b>Accessories</b>		see HMI Accessories

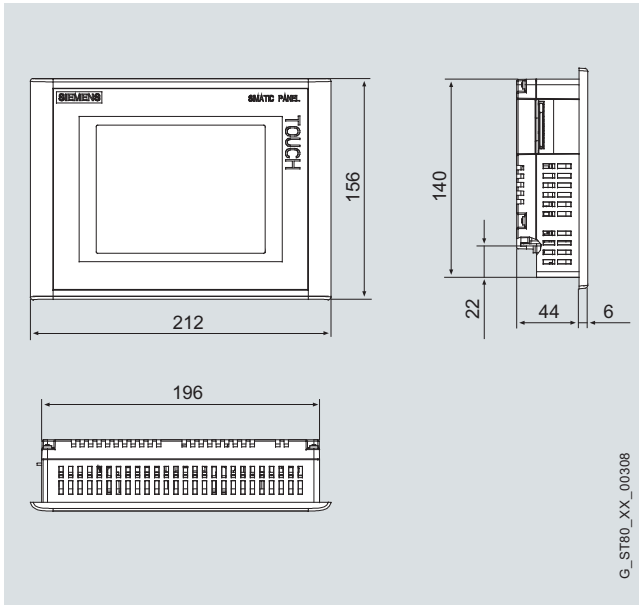
B: Subject to export regulations: AL: N and ECCN: EAR99S

D: Subject to export regulations: AL: N and ECCN: 5D992

E: Subject to export regulations: AL: 9I999 and ECCN: 5D002ENCU

### Dimensional drawings

All dimensions in mm. Tolerance  $\pm 1$  mm. Panel cutout see technical specifications.



SIMATIC TP277

### More information

Additional information is available on the Internet at:

[www.siemens.com/simatic-panels](http://www.siemens.com/simatic-panels)

#### Note:

Do you require a specific modification or extension to the products described here? Under "Customized products", you can find information about additional and generally available products for the sector, and about the possibilities for customized modification and adaptation.



# Operator panels

## Panels – 270 series

### SIMATIC OP 277 6"

#### Overview



- Operator Panel with extensive functions for operator control and monitoring of machines and plants
- Content of message buffer is retained even when panel is disconnected, without batteries
- Pixel graphics TFT display with 256 colors
- 36 system keys, 24 freely-configurable and freely-inscribable function keys (18 with LEDs)
- Interfaces for communication with Siemens SIMATIC S7 (e.g. MPI, PROFIBUS DP) are onboard
- Ethernet onboard
- Use of scripts and archives
- Drivers are also available for non-Siemens PLCs
- Installation-compatible with OP 270 6"

#### Benefits

- Reduction of service and commissioning costs through:
  - Backup/restoration via a process interface or optionally via a Multi Media Card
  - Remote downloading of the configuration with automatic transfer recognition via all device interfaces
  - Maintenance-free design (no battery) and long service life of the backlighting
- Maintenance-free message buffer
- Use of scripts and archives
- Can be used world-wide:
  - 32 offline languages can be configured (incl. Asian and Cyrillic character sets)
  - 16 online languages can be selected directly on the device
- Graphic library available with off-the-shelf picture objects
- Standard interfaces for increasing flexibility:
  - External multimedia card, used for recipe data sets, archive and for backup of configuration/system data
- Integrated USB interface for connecting, for example, standard printers
- Installation-compatible with OP 270 6"
- Simple engineering supported by comprehensive documentation on the SIMATIC HMI Manual Collection DVD
- Integral component of Totally Integrated Automation (TIA):
  - Increases productivity, minimizes engineering outlay, reduces lifecycle costs

#### Application

Thanks to their practical functions and large user memory, the OP 277 6" Operator Panels can be used wherever operator control and monitoring of machines and plants is necessary on site – whether in production automation, process automation or building-services automation. The OP 277 6" offers a 256-color TFT display. The unit has an integrated PROFINET I/O interface for even greater flexibility. A further highlight is the non-volatile message buffer included as standard that stores messages permanently without battery backup.



### Design

- 256-color TFT display
- CCFL<sup>1)</sup> Long-life backlighting
- Membrane keyboard with 36 system keys, 24 freely-configurable function keys (18 with LEDs)
- Rugged plastic housing with degree of protection IP65 (front)/IP20 (rear):
- High performance thanks to RISC processor and 4 MB user memory, plus additional integrated recipe memory
- The data in the message buffer is retained even when the panel is disconnected from the supply, without battery backup
- MPI, PROFIBUS DP interfaces (up to 12 Mbaud) as well as USB 1.1 (max. 100 mA) onboard
- Ethernet (PROFINET I/O capable)
- Integrated USB interface
- Can be configured using SIMATIC WinCC flexible 2005 Standard SP1
- Complete functionality for demanding tasks
- Comprehensive Reichert graphic library
- 32 languages (e.g. Cyrillic, traditional Chinese, simplified Chinese) and online switching between up to 16 languages
- Multi Media Card slot, can be used for standard Multi Media Cards (for backing up archives and recipe data sets, the configuration and system data)
- Remote downloading of the configuration via all interfaces with automatic transfer recognition
- Options for SINUMERIK, Sm@rtAccess and Sm@rtService can be used
- Service-friendly thanks to maintenance-free design and long service life of the backlighting display

<sup>1)</sup> Cold Cathode Fluorescence Lamps

### Function

- Permanent window and template concept for creating screen templates
- Input/output fields for visualizing and editing process parameters
- Function keys are used for directly triggering functions and actions. Up to 16 functions can be configured simultaneously on function keys. The function keys can be used directly as PROFIBUS DP input I/Os
- Indicator light for machine and plant status indication
- Fixed texts for labeling function keys, process images and process values in any character size
- Help texts for process displays, messages, and variables
- Vector graphics, graphics can be used as icons instead of text for "labeling" buttons. They can also be used as full-screen background images. The configuration tool contains a library with extensive graphics and diverse objects. All editors with an OLE interface can be used as graphics editors (such as PaintShop, Designer or CorelDraw).

- Curve functions and bars are used for the display of dynamic values in graphic-based format
- Dynamic positioning of objects and dynamic showing/hiding of objects
- Arithmetic functions, limit value monitoring for reliable process control with inputs and outputs
- Online language selection (16 selectable languages), incl. Asian and Cyrillic languages  
This also applies to language-specific graphics
- Timer for cyclic function processing
- Password protection (security)  
User management – Authentication by means of user ID and password plus privileges specific to user groups, which is an integral part of SIMATIC
- Signaling system;  
Freely definable message classes (acknowledgement behavior and display can be configured), administration of status, fault and system alarms. The message history is retained even if the device is switched off.  
Analog alarms (limit value messages) in addition to bit messages
- Visual Basic Script, flexibility thanks to the implementation of new functions including linking to variables (comparison operations, loops, etc.)
- Archiving of messages and process values (on MultiMedia card or network drives over Ethernet)
  - Various archive types: Circulating and sequence archive
  - Storage of archive data in standard Windows format (CSV)
  - Online evaluation of process value archives through trend curves
  - External processing using standard tools (MS Excel and MS Access) is possible
- Recipe management
  - With additional data storage (on ext. storage medium)
  - Online/offline processing on the panel
  - Storage of recipe data in standard Windows format (CSV)
  - External processing using standard tools such as Excel and Access is possible
- Multi Media Card (MMC) slot for external standard data carrier, can be used for backup/restoration or for transporting recipe data records
- User-friendly maintenance and configuration thanks to:
  - Backup and restoration of the configuration, operating system, data records and firmware on a PC using ProSave
  - Option to download/upload the configuration via all device interfaces (with automatic transfer detection)
  - Individual contrast setting and calibration
  - Configuration simulation directly on the configuration computer

### Configuration

The configuration is implemented using the innovative SIMATIC WinCC Comfort engineering tool. Projects generated using WinCC flexible can be easily migrated to WinCC.

### Additional options

- Sm@rtServer  
Remote control and monitoring of SIMATIC HMI systems based on TCP/IP networks

# Operator panels

## Panels – 270 series

### SIMATIC OP 277 6"

#### Technical specifications

Product type designation	6AV6 643-0BA01-1AX0 OP 277 6"
<b>Display</b>	
Size	5.7"
Display type	TFT, 256 colors
Resolution (pixels)	
• Resolution (WxH in pixel)	320 x 240
Backlighting	
• MTBF backlighting (at 25 °C)	about 60,000 hours
<b>Control elements</b>	
Control elements	Membrane keyboard
Function keys, programmable	24 function keys, 18 with LEDs
Connection for mouse/keyboard/barcode reader	USB / USB / USB
Keyboard	
• System keys	36
• Numeric/alphabetical input	Yes / Yes (only English font can be displayed, only on screen)
<b>Supply voltage</b>	
Input voltage	
• permissible range	+20.4 V to +28.8 V DC
• Supply voltage	24 V DC
<b>Processor</b>	
Processor	RISC 32-bit
<b>Memory</b>	
Type	Flash / RAM
Usable memory for user data	4 MB usable memory for user data
<b>Type of output</b>	
LED colors	Green
<b>Time of day</b>	
Clock	
• Type	Software clock, synchronizable, no battery backup
<b>Interfaces</b>	
Interfaces	1 x RS422, 1 x RS485, 1 x Ethernet (RJ45)
USB port	1 x USB
Multi Media Card slot	1 x Multi Media Card slot
Industrial Ethernet	
• Industrial Ethernet interface	1 x Ethernet (RJ45)
<b>Ambient conditions</b>	
Operating temperature	
• Operation	0 °C to +50 °C
Storage/transport temperature	
• Transport, storage	-20 °C to +60 °C
Relative humidity	
• max. relative humidity	80 %
Mounting position	vertical
<b>Degree and class of protection</b>	
Front	IP65
Rear	IP20

Product type designation	6AV6 643-0BA01-1AX0 OP 277 6"
<b>Standards, approvals, certificates</b>	
Certifications	CE, UL
<b>Operating systems</b>	
Operating system	Windows CE
<b>Configuration</b>	
Configuration software	
• Configuration tool	see "Configuration overview" from page 2/3
<b>Functionality under WinCC flexible/WinCC (TIA portal)</b>	
Applications/options	See chapter 4: HMI software/SIMATIC WinCC flexible options and SIMATIC WinCC (TIA portal) options
Number of Visual Basic Scripts	50
Task planner	Yes
Help system	Yes
Status/control	with SIMATIC S7
With alarm logging system (incl. buffer and acknowledgment)	
• Number of messages	4 000
• Bit messages	Yes
• Analog messages	Yes
• Message buffer	Ring buffer (n x 512 entries), retentive, maintenance-free
Recipes	
• Recipes	300
• Data records per recipe	500
• Entries per data record	1000
• Recipe memory	64 KB integrated Flash, expandable
Number of process images	
• Process images	500
• Variables	2 048
• Limit values	Yes
• Multiplexing	Yes
Image elements	
• Text objects	10,000 text elements
• Graphic object	Bit maps, icons, vector graphics
• dynamic objects	Diagrams, bar graphs, sliders, analog display, invisible buttons
Lists	
• Text lists	500
• Graphic list	400
• Libraries	Yes
Archiving	
• Number of archives per project	20
• Number of measuring points per project	20
• Number of entries per archive	10 000
• Memory location	Multi Media Card

**Technical specifications (continued)**

<b>Product type designation</b>	<b>6AV6 643-0BA01-1AX0 OP 277 6"</b>
Security	
• Number of user groups	50
• Passwords exportable	Yes
• Number of user rights	32
Data carrier support	
• Multimedia Card	Yes
Recording	
• Recording/Printing	Alarms, report (shift report), color print, hardcopy
Fonts	
• Keyboard fonts	US American (English)
Languages	
• Configuration languages	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H
• Character sets	Tahoma, Arial, Courier New, WinCC flexible Standard, symbol languages, all freely scalable
Transfer (upload/download)	
• Transfer of configuration	MPI/PROFIBUS DP, USB, Ethernet, automatic transfer recognition
Process coupling	
• Connection to controller	see "System interfaces" from page 2/178
Expandability/openness	
• Open Platform Program	Yes
<b>I/O</b>	
I/O devices	Printer, barcode reader
<b>Dimensions and weight</b>	
Dimensions	
• Front of enclosure (W x H)	308 mm x 204 mm
• Mounting cutout/device depth (W x H)	281 mm x 177 mm / 59 mm device depth
Weight	
• Weight	1.19 kg

**Ordering data****Order No.**

<b>SIMATIC OP 277 6"</b>	E	<b>6AV6 643-0BA01-1AX0</b>
Operator Panel with 5.7" TFT display, color (265 colors), incl. mounting accessories		
<b>Configuration</b>		
With SIMATIC WinCC flexible or SIMATIC WinCC		see HMI Software
<b>Configuration set</b>	D	<b>6AV6 622-0BA01-0AA0</b>
Consisting of:		
• WinCC flexible Standard engineering software		
• Documentation DVD, 5 languages (English, French, German, Italian, Spanish)		
• RS 232 cable (5 m)		
• MPI cable, 5 m (for download and test purposes only)		
<b>Applications/Options</b>		
For configuration with WinCC flexible		see HMI Software
• WinCC flexible /Sm@rtAccess		see HMI Software
• WinCC flexible /Sm@rtService		see HMI Software
• WinCC flexible /ProAgent		see HMI Software
<b>Documentation (to be ordered separately)</b>		
<b>TP 277 / OP 277 Operating Instructions</b>		
• German		<b>6AV6 691-1DH01-0AA0</b>
• English		<b>6AV6 691-1DH01-0AB0</b>
• French		<b>6AV6 691-1DH01-0AC0</b>
• Italian		<b>6AV6 691-1DH01-0AD0</b>
• Spanish		<b>6AV6 691-1DH01-0AE0</b>
<b>WinCC flexible Compact/Standard/Advanced User Manual</b>		
• German		<b>6AV6 691-1AB01-3AA0</b>
• English		<b>6AV6 691-1AB01-3AB0</b>
• French		<b>6AV6 691-1AB01-3AC0</b>
• Italian		<b>6AV6 691-1AB01-3AD0</b>
• Spanish		<b>6AV6 691-1AB01-3AE0</b>
<b>WinCC flexible Communication User Manual</b>		
• German		<b>6AV6 691-1CA01-3AA0</b>
• English		<b>6AV6 691-1CA01-3AB0</b>
• French		<b>6AV6 691-1CA01-3AC0</b>
• Italian		<b>6AV6 691-1CA01-3AD0</b>
• Spanish		<b>6AV6 691-1CA01-3AE0</b>
<b>SIMATIC HMI Manual Collection</b>	B	<b>6AV6 691-1SA01-0AX0</b>
Electronic documentation, on DVD		
• 5 languages (English, French, German, Italian and Spanish); contains: all currently available user manuals, manuals and commu- nication manuals for SIMATIC HMI		
<b>Accessories</b>		see HMI Accessories

B: Subject to export regulations: AL: N and ECCN: EAR99S

D: Subject to export regulations: AL: N and ECCN: 5D992

E: Subject to export regulations: AL: 9I999 and ECCN: 5D002ENCU

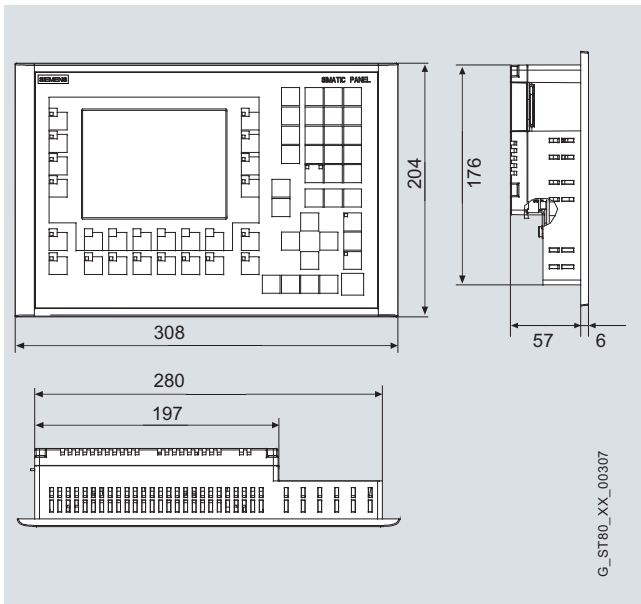
# Operator panels

## Panels – 270 series

### SIMATIC OP 277 6"

#### Dimensional drawings

All dimensions in mm. Tolerance  $\pm 1$  mm. Panel cutout see technical specifications.



SIMATIC OP 277

#### More information

Additional information is available on the Internet at:

[www.siemens.com/simatic-panels](http://www.siemens.com/simatic-panels)

#### Note:

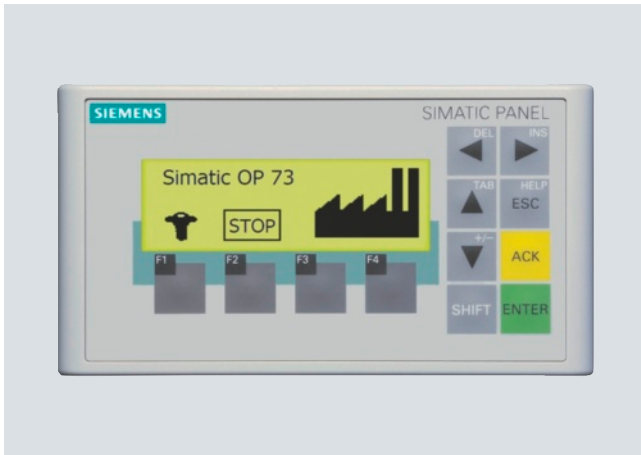
Do you require a specific modification or extension to the products described here? Under "Customized products", you can find information about additional and generally available products for the sector, and about the possibilities for customized modification and adaptation.

# Operator panels

## SIPLUS Panels for 70 series

### SIPLUS HMI OP 73

#### Overview



- Operator panel for operation and monitoring of machines and systems
- Graphics in a new dimension: small and smart
- Pixel-graphics 3" LCD, monochrome
- 8 system keys, 4 freely configurable function keys
- All interfaces (e.g. MPI, PROFIBUS DP) are onboard
- SIPLUS OP 73 is the successor of the Operator Panel OP3

#### Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

#### SIPLUS HMI OP 73

<b>Order No.</b>	<b>6AG1 641-0AA11-4AX0</b>
<b>Order No. based on</b>	<b>6AV6 641-0AA11-0AX0</b>
Ambient temperature range	0 ... +50 °C
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical data	The technical data of the standard product applies except for the ambient conditions.
<b>Ambient conditions</b>	
Relative humidity	5 ... 100 % Condensation permissible
Biologically active substances	Conformity with EN 60721-3-3, Class 3B2 mold and fungal spores (except fauna)
Chemically active substances	Conformity with EN 60721-3-3, Class 3C4 incl. salt mist and ISA-S71.04 severity level G1; G2; G3; GX <sup>1) 2)</sup>
Mechanically active substances	Conformity with EN 60721-3-3, Class 3S4 including conductive sand, dust <sup>2)</sup>
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1000 ... +2000 m) see ambient temperature range 795 ... 658 hPa (+2000 ... +3500 m) derating 10 K 658 ... 540 hPa (+3500 ... +5000 m) derating 20 K

- 1) ISA-S71.04 severity level GX: Long-term load:  
 SO<sub>2</sub> <4.8 ppm; H<sub>2</sub>S <9.9 ppm; Cl <0.2 ppm; HCl <0.66 ppm;  
 HF <0.12 ppm; NH <49 ppm; O<sub>3</sub> <0.1 ppm; NO x <5.2 ppm  
 Threshold/ limit value (max. 30 min/d): SO<sub>2</sub> <17.8 ppm;  
 H<sub>2</sub>S <49.7 ppm; Cl <1.0 ppm; HCl <3.3 ppm; HF <2.4 ppm;  
 NH <247 ppm; O<sub>3</sub> <1.0 ppm; NO x <10.4 ppm

- 2) The supplied plug covers must remain in place over the unused interface when operated in atmospheres containing corrosive gases!

The technical documentation on SIPLUS can be found here:

[www.siemens.com/siplus-extreme](http://www.siemens.com/siplus-extreme)

Ordering data	Order No.
<b>SIPLUS HMI OP 73</b> (medial exposure)	<b>B 6AG1 641-0AA11-4AX0</b>
Improved operator panel with 3" display, mono, including mounting accessories	
<b>Accessories</b>	see SIMATIC HMI Operator Panel OP 73

B: Subject to export regulations: AL: N and ECCN: EAR99S

# Operator panels

## SIPLUS Panels for 70 series

### SIPLUS HMI OP 77B

#### Overview



- Compact operator panel for operator control and monitoring of machines and systems
- Graphics in a new dimension: small and smart
- Pixel-graphics 4.5" LCD, monochrome
- 23 system keys, 8 freely-configurable and freely-inscribable function keys (4 with LEDs)
- All interfaces (e.g. MPI, PROFIBUS DP) are onboard
- Non-Siemens PLCs can be connected using easy-to-use drivers
- Together with OP 77A, successor to the successful OP 7

#### Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

#### SIPLUS HMI OP 77B

<b>Order No.</b>	<b>6AG1 641-0CA01-4AX1</b>
<b>Order No. based on</b>	<b>6AV6 641-0CA01-0AX1</b>
Ambient temperature range	0 ... +50 °C
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical data	The technical data of the standard product applies except for the ambient conditions.
<b>Ambient conditions</b>	
Relative humidity	5 ... 100 % Condensation permissible
Biologically active substances	Conformity with EN 60721-3-3, Class 3B2 mold and fungal spores (except fauna)
Chemically active substances	Conformity with EN 60721-3-3, Class 3C4 incl. salt mist and ISA-S71.04 severity level G1; G2; G3; GX <sup>1) 2)</sup>
Mechanically active substances	Conformity with EN 60721-3-3, Class 3S4 including conductive sand, dust <sup>2)</sup>
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1000 ... +2000 m) see ambient temperature range  795 ... 658 hPa (+2000 ... +3500 m) derating 10 K  658 ... 540 hPa (+3500 ... +5000 m) derating 20 K

- 1) ISA-S71.04 severity level GX: Long-term load:  
 SO<sub>2</sub> <4.8 ppm; H<sub>2</sub>S <9.9 ppm; Cl <0.2 ppm; HCl <0.66 ppm;  
 HF <0.12 ppm; NH <49 ppm; O<sub>3</sub> <0.1 ppm; NO x <5.2 ppm  
 Threshold/ limit value (max. 30 min/d): SO<sub>2</sub> <17.8 ppm;  
 H<sub>2</sub>S <49.7 ppm; Cl <1.0 ppm; HCl <3.3 ppm; HF <2.4 ppm;  
 NH <247 ppm; O<sub>3</sub> <1.0 ppm; NO x <10.4 ppm

- 2) The supplied plug covers must remain in place over the unused interface when operated in atmospheres containing corrosive gases!

The technical documentation on SIPLUS can be found here:

[www.siemens.com/siplus-extreme](http://www.siemens.com/siplus-extreme)

Ordering data	Order No.
<b>SIPLUS HMI OP 77B</b> (medial exposure)  Operator Panel with 4.5" display, mono, including mounting accessories	<b>E 6AG1 641-0CA01-4AX1</b>
<b>Accessories</b>	see SIMATIC HMI Operator Panel OP 77B

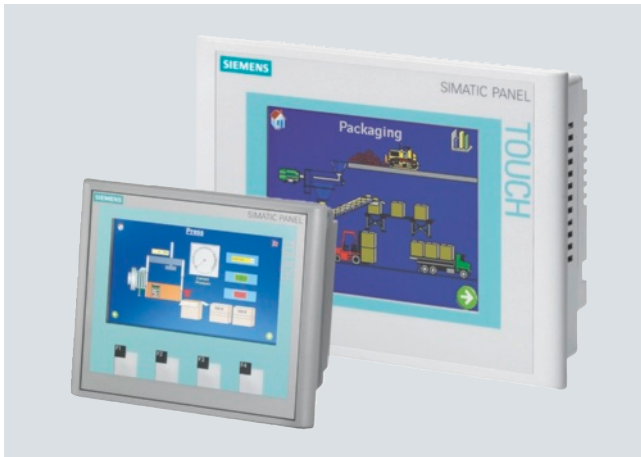
E: Subject to export regulations: AL: 91999 and ECCN: 5D002ENCU

# Operator panels

## SIPLUS Panels for 170 series

SIPLUS HMI TP 177B

### Overview



- Touch Panel with extensive functions for operator control and monitoring of machines and plants
- Pixel-graphic display with analog touch screen
  - 4.3" TFT widescreen color display or
  - 5.7" STN blue mode/color display

- All interfaces for communication with Siemens SIMATIC S7 (e.g. MPI, PROFIBUS DP) are onboard
- PROFINET interface already on board in color version
- Drivers are also available for controllers from other manufacturers
- Data in the message buffer is retained even if the panel is switched off, without battery
- The 4" version features 4 additional function keys for optimized operator control efficiency
- The SIMATIC TP 177B 6" is the innovative successor to the TP 170B Touch Panel
- The TP 177B PN/DP is also available with a stainless steel front (EN 1672-2). The stainless steel front is also appropriate for increased demands such as in the food and beverages industry.

#### Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

SIPLUS HMI	TP 177B COLOR PN/DP	TP 177B MONO DP	TP 177B 4" COLOR PN/DP
<b>Order No.</b>	<b>6AG1 642-0BA01-4AX1</b>	<b>6AG1 642-0BC01-4AX1</b>	<b>6AG1 642-0BD01-2AX0</b>
<b>Order No. based on</b>	<b>6AV6 642-0BA01-1AX1</b>	<b>6AV6 642-0BC01-1AX1</b>	<b>6AV6 642-0BD01-3AX0</b>
Ambient temperature range	0 ... +50 °C	0 ... +50 °C	-10 ... +60 °C
Conformal coating	Coating of the printed circuit boards and the electronic components		
Technical specifications	The technical data of the standard product applies except for the ambient conditions.		
<b>Ambient conditions</b>			
Relative humidity	5 ... 100 % Condensation permissible		
Biologically active substances	Conformity with EN 60721-3-3, Class 3B2 mold and fungal spores (except fauna)		
Chemically active substances	Conformity with EN 60721-3-3, Class 3C4 incl. salt mist and ISA-S71.04 severity level G1; G2; G3; GX <sup>1) 2)</sup>		
Mechanically active substances	Conformity with EN 60721-3-3, Class 3S4 including conductive sand, dust <sup>2)</sup>		
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1000 ... +2000 m) see ambient temperature range 795 ... 658 hPa (+2000 ... +3500 m) derating 10 K 658 ... 540 hPa (+3500 ... +5000 m) derating 20 K		

<sup>1)</sup> ISA-S71.04 severity level GX: Long-term load: SO<sub>2</sub> < 4.8 ppm H<sub>2</sub>S < 9.9 ppm; Cl < 0.2 ppm; HCl < 0.66 ppm; HF < 0.12 ppm; NH < 49 ppm; O<sub>3</sub> < 0.1 ppm; NOX < 5.2 ppm  
Threshold/ limit value (max. 30 min/d): SO<sub>2</sub> < 14.8 ppm; H<sub>2</sub>S < 49.7 ppm; Cl < 1.0 ppm; HCl < 3.3 ppm; HF < 2.4 ppm; NH < 247 ppm; O<sub>3</sub> < 1.0 ppm; NOX < 10.4 ppm

<sup>2)</sup> The supplied plug covers must remain in place over the unused interface when operated in atmospheres containing corrosive gases

For further technical documentation on SIPLUS, see:

[www.siemens.com/siplus-extreme](http://www.siemens.com/siplus-extreme)

Ordering data	Order No.	Order No.
<b>SIPLUS HMI TP 177B</b>		
Touch Panel with		
• 4.3" TFT widescreen color display (256 colors)	E <b>6AG1 642-0BD01-2AX0</b>	see SIMATIC TP 177B
• 5.7" STN blue mode display (4 levels)	E <b>6AG1 642-0BC01-4AX1</b>	
• 5.7" STN color display (256 colors)	E <b>6AG1 642-0BA01-4AX1</b>	
including mounting hardware		

E: Subject to export regulations: AL: 91999 and ECCN: 5D002ENCU

#### Accessories

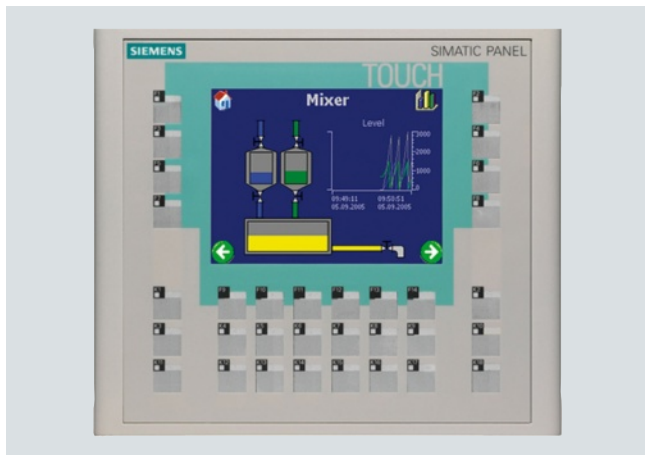


# Operator panels

## SIPLUS Panels for 170 series

### SIPLUS HMI OP 177B

#### Overview



- Touch/keys panel with extensive functionality for operation and monitoring of machines and systems
- The buffer content remains even when the panels are switched off and no battery is present
- Pixel graphics STN display blue mode/color with analog touch screen and 32 additional function keys
- Interfaces for communication with Siemens SIMATIC S7 (e.g. MPI, PROFIBUS DP) onboard
- Ethernet in the color version onboard
- Drivers are also available for controllers from other manufacturers
- Installation compatible with OP17

#### Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

SIPLUS HMI OP 177B color PN/DP	OP 177B COLOR PN/DP	OP 177B MONO DP
<b>Order No.</b>	<b>6AG1 642-0DA01-4AX1</b>	<b>6AG1 642-0DC01-4AX1</b>
<b>Order No. based on</b>	<b>6AV6 642-0DA01-1AX1</b>	<b>6AV6 642-0DC01-1AX1</b>
Ambient temperature range	0 ... +50 °C	
Conformal coating	Coating of the printed circuit boards and the electronic components	
Technical specifications	The technical data of the standard product applies except for the ambient conditions.	
<b>Ambient conditions</b>		
Relative humidity	5 ... 100 % Condensation permissible	
Biologically active substances	Conformity with EN 60721-3-3, Class 3B2 mold and fungal spores (except fauna)	
Chemically active substances	Conformity with EN 60721-3-3, Class 3C4 incl. salt mist and ISA-S71.04 severity level G1; G2; G3; GX <sup>1) 2)</sup>	
Mechanically active substances	Conformity with EN 60721-3-3, Class 3S4 including conductive sand, dust <sup>2)</sup>	
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1000 ... +2000 m) see ambient temperature range 795 ... 658 hPa (+2000 ... +3500 m) derating 10 K 658 ... 540 hPa (+3500 ... +5000 m) derating 20 K	

<sup>1)</sup> ISA-S71.04 severity level GX: Long-term load: SO<sub>2</sub> < 4.8 ppm; H<sub>2</sub>S < 9.9 ppm; Cl < 0.2 ppm; HCl < 0.66 ppm; HF < 0.12 ppm; NH < 49 ppm; O<sub>3</sub> < 0.1 ppm; NO<sub>x</sub> < 5.2 ppm  
Threshold/ limit value (max. 30 min/d): SO<sub>2</sub> < 17.8 ppm; H<sub>2</sub>S < 49.7 ppm; Cl < 1.0 ppm; HCl < 3.3 ppm; HF < 2.4 ppm; NH < 247 ppm; O<sub>3</sub> < 1.0 ppm; NO<sub>x</sub> < 10.4 ppm

<sup>2)</sup> The supplied plug covers must remain in place over the unused interface when operated in atmospheres containing corrosive gases

For further technical documentation on SIPLUS, see:

[www.siemens.com/siplus-extreme](http://www.siemens.com/siplus-extreme)

Ordering data	Order No.	Accessories	Order No.
<b>SIPLUS HMI OP 177B color PN/DP</b> (medial exposure) Operator Panel with 5.7" color STN display, incl. mounting accessories	E <b>6AG1 642-0DA01-4AX1</b>		see SIMATIC HMI OP 177B
<b>SIPLUS HMI OP 177B MONO DP</b> (medial exposure) Operator Panel with 5.7" blue mode STN display, incl. mounting accessories	E <b>6AG1 642-0DC01-4AX1</b>		

E: Subject to export regulations: AL: 91999 and ECCN: 5D002ENCU



# Operator panels

## SIPLUS Panels for 270 series

SIPLUS HMI TP 277 6"

### Overview



- Touch Panel with extensive functions for operator control and monitoring of machines and plants
- The buffer content remains even when the panels are off and no battery is present
- Pixel graphics TFT display with 256 colors and touch screen
- Onboard interfaces for communication with Siemens SIMATIC S7 (e.g. MPI, PROFIBUS DP)
- Ethernet onboard
- Use of scripts and archives
- Drivers are also available for controllers from other manufacturers
- Installation-compatible with TP 270 6" and MP 270B 6"

#### Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

SIPLUS HMI TP277 6"	
Order No.	6AG1 643-0AA01-4AX0
Order No. based on	6AV6 643-0AA01-1AX0
Ambient temperature range	0 ... +50 °C
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical data	The technical data of the standard product applies except for the ambient conditions.
<b>Ambient conditions</b>	
Relative humidity	5 ... 100 % Condensation permissible
Biologically active substances	Conformity with EN 60721-3-3, Class 3B2 mold and fungal spores (except fauna)
Chemically active substances	Conformity with EN 60721-3-3, Class 3C4 incl. salt mist and ISA-S71.04 severity level G1; G2; G3; GX <sup>1) 2)</sup>
Mechanically active substances	Conformity with EN 60721-3-3, Class 3S4 including conductive sand, dust <sup>2)</sup>
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1000 ... +2000 m) see ambient temperature range 795 ... 658 hPa (+2000 ... +3500 m) derating 10 K 658 ... 540 hPa (+3500 ... +5000 m) derating 20 K

<sup>1)</sup> ISA-S71.04 severity level GX: Long-term load: SO<sub>2</sub> < 4.8 ppm; H<sub>2</sub>S < 9.9 ppm; Cl < 0.2 ppm; HCl < 0.66 ppm; HF < 0.12 ppm; NH < 49 ppm; O<sub>3</sub> < 0.1 ppm; NO<sub>x</sub> < 5.2 ppm  
Limit value (max. 30 min/d): SO<sub>2</sub> < 17.8 ppm; H<sub>2</sub>S < 49.7 ppm; Cl < 1.0 ppm; HCl < 3.3 ppm; HF < 2.4 ppm; NH < 247 ppm; O<sub>3</sub> < 1.0 ppm; NO<sub>x</sub> < 10.4 ppm

<sup>2)</sup> The supplied plug covers must remain in place over the unused interface when operated in atmospheres containing corrosive gases!

The technical documentation on SIPLUS can be found here:

[www.siemens.com/siplus-extreme](http://www.siemens.com/siplus-extreme)

Ordering data	Order No.	Order No.
<b>SIPLUS HMI TP 277 6"</b> (medial exposure) Touch Panel with 5.7" TFT display, color (256 colors), incl. mounting accessories	<b>6AG1 643-0AA01-4AX0</b>	<b>Accessories</b> see SIMATIC HMI TP 277 6"

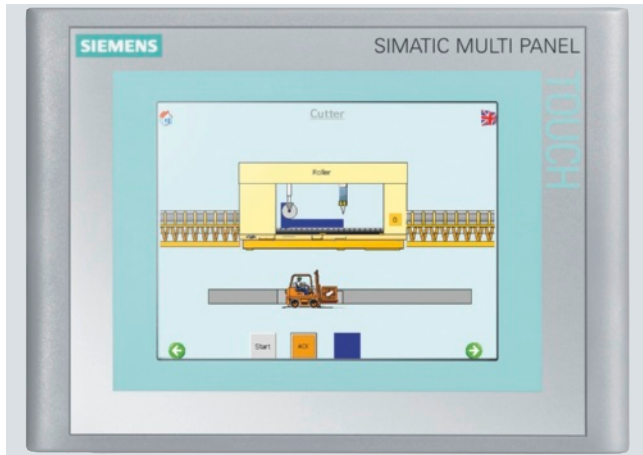
E: Subject to export regulations: AL: 91999 and ECCN: 5D002ENCU

# Operator panels

## Multi Panels – 170 series

### SIMATIC MP 177

#### Overview



- Like operator panels, Multi Panels (MP) are used for local machine operation and monitoring
- Message buffer contents and residual WinAC MP data are retained even when panel is disconnected, without batteries
- PLC functionality can be integrated directly into the MP 177 platform as an option
- The multi panel can be expanded with the options Sm@rtService and Sm@rtAccess
- Pixel-graphics 5.7" TFT display, color (64k colors)
- All interfaces, e.g. MPI, PROFIBUS DP, USB, PROFINET (Ethernet TCP/IP), are onboard

The MP 177 6" Touch can also be delivered as a package, complete with a WinAC MP 177.

#### Benefits

- Integral component of Totally Integrated Automation (TIA): Increased productivity, minimum engineering overhead, reduction in life-cycle costs
- Modular expansion with options such as:
  - WinAC MP 177/software PLC (PLC programs compatible to the greatest possible extent)
  - WinCC flexible /Sm@rtAccess for communication between different SIMATIC HMI systems
  - WinCC flexible /Sm@rtService for remote maintenance and servicing of machines/plants via the intranet/Internet
- Reduction of service and commissioning costs through:
  - Backup/Restore via Ethernet (TCP/IP), MPI, PROFIBUS DP or optionally via standard MMC/SD card or USB stick
  - HMI, PLC, system data including licenses for a standard storage medium, simplest manageability
  - Remote download/upload of the configuration and firmware (Remote = automatic transfer recognition)
  - Specific drivers for non-Siemens PLCs can be reloaded
  - Long service life of the backlighting
- Can be used worldwide:
  - 32 languages can be configured (incl. Asian and Cyrillic character sets)
- Standard hardware and software interfaces for increasing flexibility:
  - SD/MultiMediaCard slot for memory expansions, backup/restore or additional interfaces
  - Ethernet (TCP/IP) for central data and project management control link possible to SIMATIC S7
  - A cross cable or normal LAN cable can be used for the point-to-point connection
  - Standard Windows storage formats (CSV) for recipes permit further processing with standard tools (e.g. Microsoft Excel)

#### Application

Multi panels are used in the most diverse industries and applications. Their usage can be expanded by means of options, e.g. integration of the PLC functionality by means of WinAC MP 177. The software PLC is customized for small and mid-sized applications.

The diskless and fanless design enables implementation in areas where high vibration or dust load limits the operation of a PC. Maintenance-free data management ensures backup of all important data even when disconnected.

### Design

- Compact design with low mounting depth
  - Display resolution (320 x 240 pixels) with 64k colors, dimmable
- The front is resistant to various oils, greases and standard detergents
- Degree of protection IP65/NEMA 4x/NEMA 12 (front) or IP20 (rear)
- All connections are pluggable
- Interfaces:
  - RS 485/RS 422 interface for process connections (PPI, MPI, PROFIBUS DP up to 12 Mbit/s)
  - USB interface for memory, mouse, keyboard, printer, and downloading/uploading of the configuration
  - Ethernet (TCP/IP) for data exchange with a higher-level PC
  - Slot for SD Card/Multi Media Card

### Function

- Display and modification of process parameters
- Process display:
  - Vector graphics (various line and surface objects)
  - Dynamic positioning and dynamic showing/hiding of objects
  - Pixel-graphic displays and bar displays
  - Curve graphics with paging and zoom functions for access to the history and for flexible selection of the presentation time; reading ruler for determining the current values and displaying them in a table
  - Extensive symbol libraries (SIMATIC HMI Symbol Library)
  - Screen objects: Slider, analog instrument, date and time display
  - Timer for cyclical function processing
- Multiplex function for variables
- Signaling system
  - Bit messages and analog messages (limit value messages)
  - Message history for status and fault messages
  - Message buffer stores even when panel is disconnected, without batteries
  - Message window and message line
- Message log and shift log
- Print functions (see "Recommended printers")
- Fully developed language switching for texts and graphics including Asian and Cyrillic character sets
- Recipe management
  - Internal and/or external data storage
  - Export of recipe data in standard Windows format (CSV)
- TIA Runtime Functionalities
  - A collective data management for PLC and HMI of data, bit memories, inputs/outputs, etc.
  - Collective usage of symbolic object names
  - Report system errors with Alarm S to SIMATIC S7 and SIMOTION with a mouse click
  - STATUS/FORCE-VAR in conjunction with SIMATIC S7
- Password system
  - Authentication and assignment of user rights with user ID and password

### Configuration

The configuration is implemented using the SIMATIC WinCC Comfort engineering software.

A Getting Started video is available at:

<http://support.automation.siemens.com/WW/view/en/32010673>

free of charge.

### Applications/Options

- WinAC MP software PLC for Multi Panels
  - WinAC MP 177 option for MP 177 (software PLC similar to the performance class of CPU 314)
  - The I/O devices can be connected via PROFIBUS DP
- Service functions can be used with the "Sm@rtServer" option
  - E-mail generation and web server can be used
  - Remote control of the SIMATIC HMI panel using a standard Internet Explorer
- Client/server functions can be used with the "Sm@rtServer" option
  - Remote operation and monitoring from one SIMATIC HMI system to another SIMATIC HMI system
  - Plant-wide polling of information
  - Central archiving of process data

### Integration

The MP 177 6" Touch is multi-protocol-capable and can be connected to some extent simultaneously to:

- SIMATIC S7-200/-300/-400
- SIMATIC WinAC RTX/Slot PLC
- SIMATIC WinAC MP
- SIMOTION
- SINUMERIK

(optionally with "SINUMERIK HMI copy license WinCC flexible CE"; the "SINUMERIK HMI engineering package WinCC flexible" is additionally required for configuration; for further information see Catalog NC 60)

- PLCs from other manufacturers
  - Allen Bradley
  - Mitsubishi
  - LG GLOFA GM
  - Modicon
  - GE-Fanuc
  - Omron
  - Telemecanique Uni-Telway
- Over Ethernet (TCP/IP) to a higher-level PC, with enabled network printer

### Note:

Further information can be found under "System interfaces".

# Operator panels

## Multi Panels – 170 series

### SIMATIC MP 177

#### Technical specifications

Product type designation	6AV6 642-0EA01-3AX0 6" Touch
<b>Display</b>	
Size	5.7"
Display type	TFT, 65536 colors
Resolution (pixels)	
• Resolution (WxH in pixel)	320 x 240
Backlighting	
• MTBF backlighting (at 25 °C)	about 50,000 hours
<b>Control elements</b>	
Control elements	Touch screen
Connection for mouse/keyboard/barcode reader	USB / USB / USB
Keyboard	
• Numeric/alphabetical input	Yes (on-screen keyboard) / Yes (on-screen keyboard)
Touch operation	
• Touch screen	analog, resistive
<b>Supply voltage</b>	
Input voltage	
• permissible range	+19.2 V to +28.8 V DC
• Supply voltage	24 V DC
<b>Processor</b>	
Processor	RISC 32-bit, 520 MHz
<b>Memory</b>	
Type	Flash / RAM
Usable memory for user data	2 MB usable memory for user data
<b>Time of day</b>	
Clock	
• Type	Hardware clock, battery backup, synchronizable
<b>Interfaces</b>	
USB port	1 x USB
Multimedia card	combined
Industrial Ethernet	
• Industrial Ethernet interface	1 x Ethernet (RJ45)
<b>Protocols</b>	
Protocols (terminal link)	
• Sm@rtAccess	Yes
<b>EMC</b>	
Emission of radio interference acc. to EN 55 011	
• Emission of radio interferences acc. to EN 55 011 (limit class A)	Yes; EN 61000-6-4, interference emission: Intended for use in industrial areas.
<b>Ambient conditions</b>	
Operating temperature	
• Operation	0 °C to +50 °C
Storage/transport temperature	
• Transport, storage	-20 °C to +70 °C
Relative humidity	
• max. relative humidity	90 %
Mounting position	vertical

Product type designation	6AV6 642-0EA01-3AX0 6" Touch
<b>Degree and class of protection</b>	
Front	IP65, NEMA 4, NEMA 4x, NEMA 12 (when installed)
Rear	IP20
<b>Standards, approvals, certificates</b>	
Certifications	CE, GL, FM Class I Div. 2, cULus, C-TICK, NEMA 4, NEMA 4x, NEMA 12
<b>Operating systems</b>	
Operating system	Windows CE (Version 5)
<b>Configuration</b>	
Configuration software	
• Configuration tool	see "Configuration overview" from page 2/3
<b>Functionality under WinCC flexible/WinCC (TIA portal)</b>	
Applications/options	See chapter 4: HMI software/SIMATIC WinCC flexible options and SIMATIC WinCC (TIA portal) option
Task planner	Yes
Help system	Yes
Status/control	with SIMATIC S7
With alarm logging system (incl. buffer and acknowledgment)	
• Number of messages	2 000
• Bit messages	Yes
• Analog messages	Yes
• Message buffer	Ring buffer (n x 256 entries), retentive, maintenance-free
Recipes	
• Recipes	100
• Data records per recipe	200
• Entries per data record	200
• Recipe memory	32 KB integrated Flash, expandable
Number of process images	
• Process images	500
• Variables	1 000
• Limit values	Yes
• Multiplexing	Yes
Image elements	
• Text objects	2,500 text elements
• Graphic object	Bit maps, icons, vector graphics
• dynamic objects	Diagrams, bar graphs, sliders, analog display, invisible buttons
Lists	
• Text lists	300
• Graphic list	100
• Libraries	Yes
Security	
• Number of user groups	50
• Passwords exportable	Yes
• Number of user rights	32
Data carrier support	
• Multimedia Card	Yes

# Operator panels

## Multi Panels – 170 series

SIMATIC MP 177

2

**Technical specifications (continued)**

<b>Product type designation</b>	<b>6AV6 642-0EA01-3AX0 6" Touch</b>
Recording	
• Recording/Printing	Alarms, report (shift report), color print, hardcopy
• Printer driver	ESC/P2, PCL3/PCL6
Fonts	
• Keyboard fonts	US American (English)
Languages	
• Configuration languages	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H
• Character sets	Tahoma, Courier New, WinCC flexible Standard, symbol languages, all freely scalable
Transfer (upload/download)	
• Transfer of configuration	MPI/PROFIBUS DP, serial, USB, Ethernet, automatic transfer recognition
Process coupling	
• Connection to controller	see "System interfaces" from page 2/178
<b>I/O</b>	
I/O devices	Printer, barcode reader
<b>Dimensions and weight</b>	
Dimensions	
• Front of enclosure (W x H)	212 mm x 156 mm
• Mounting cutout/device depth (W x H)	198 mm x 142 mm / 45 mm device depth
Weight	
• Weight	0.85 kg; max.

**Ordering data****Order No.**

<b>SIMATIC HMI MP 177 6" Touch</b>	E	<b>6AV6 642-0EA01-3AX0</b>
<b>SIMATIC MP 177 6" Touch package</b>	E	<b>6AV6 652-2JC01-2AA0</b>
Consisting of:		
• SIMATIC MP 177 6" Touch		
• SIMATIC WinAC MP <sup>2)</sup>		
• Single License for WinAC MP 177 on USB flash drive <sup>1)</sup>		
• Electronic documentation for WinAC MP		
• Standard SD card 256 MB (empty)		
<b>Starter package 613 WinAC MP</b>	E	<b>6AV6 652-2JD01-2AA0</b>
Consisting of:		
• SIMATIC MP 177 6" Touch with mounting accessories, mounting seal, power supply connector		
• SIMATIC WinAC MP including single license on a USB flash drive and electronic documentation		
• SD card 256 KB (empty)		
• ET200M incl.		
- 16 DI, 16 DO, 8 AI, 2 AO		
- FM350-2 8-channel counter		
- Front connector, bus connector, and mounting rail		
<b>Starter package 635T WinAC MP</b>	E	<b>6AV6 652-2JD01-2AA1</b>
Consisting of:		
• SIMATIC MP 177 6" Touch with mounting accessories, mounting seal, power supply connector		
• SIMATIC WinAC MP including single license on a USB flash drive and electronic documentation		
• SD card 256 KB (empty)		
• ET200M incl.		
- 32 DI, 16 DO, 8 AI, 2 AO		
- FM350-2 8-channel counter		
- Front connector, bus connector, and mounting rail		
<b>Configuration</b>		see HMI software
With SIMATIC WinCC flexible or SIMATIC WinCC		

E: Subject to export regulations: AL: 91999 and ECCN: 5D002ENCU

<sup>1)</sup> Can only be used for license handling<sup>2)</sup> WinCC flexible 2008 SP1 required

# Operator panels

## Multi Panels – 170 series

### SIMATIC MP 177

#### Ordering data

#### Order No.

##### Documentation (to be ordered separately)

##### User manual MP 177 6" Touch

• German	6AV6 691-1DP02-0AA0
• English	6AV6 691-1DP02-0AB0
• French	6AV6 691-1DP02-0AC0
• Italian	6AV6 691-1DP02-0AD0
• Spanish	6AV6 691-1DP02-0AE0

##### WinCC flexible Compact/Standard/Advanced User Manual

• German	6AV6 691-1AB01-3AA0
• English	6AV6 691-1AB01-3AB0
• French	6AV6 691-1AB01-3AC0
• Italian	6AV6 691-1AB01-3AD0
• Spanish	6AV6 691-1AB01-3AE0

##### User Manual WinCC flexible Communication

• German	6AV6 691-1CA01-3AA0
• English	6AV6 691-1CA01-3AB0
• French	6AV6 691-1CA01-3AC0
• Italian	6AV6 691-1CA01-3AD0
• Spanish	6AV6 691-1CA01-3AE0

##### SIMATIC HMI Manual Collection

6AV6 691-1SA01-0AX0

Electronic documentation,  
on DVD

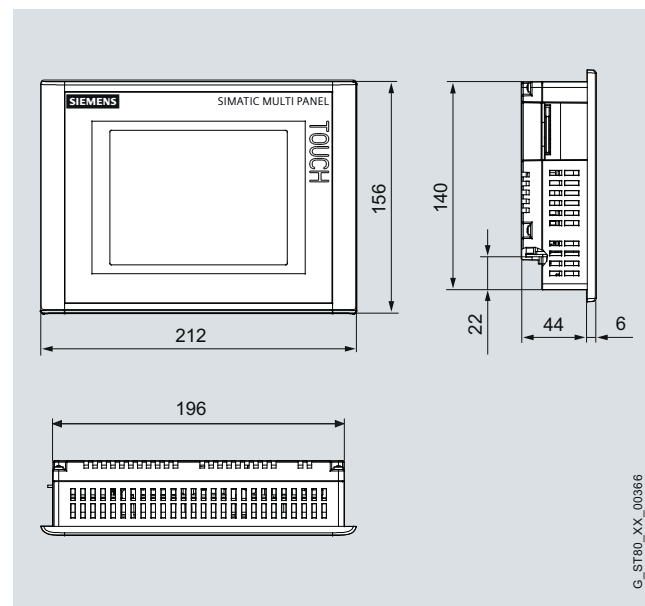
5 languages (English, French,  
German, Italian and Spanish);  
contains: all currently available  
user manuals, manuals and  
communication manuals for  
SIMATIC HMI

##### Accessories

see HMI accessories

#### Dimensional drawings

All specifications in mm. Panel cutout see technical specifications.



MP 177 6" Touch

#### More information

Additional information is available on the Internet at:

[www.siemens.com/simatic-multi-panels](http://www.siemens.com/simatic-multi-panels)

##### Note:

Do you require a specific modification or extension to the products described here? Under "Customized products", you can find information about additional and generally available products for the sector, and about the possibilities for customized modification and adaptation.

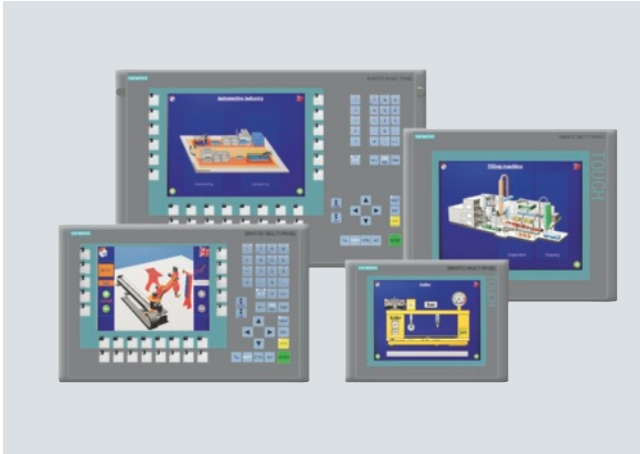
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# Operator panels

## Multi Panels – 270 series

SIMATIC MP 277

### Overview



- Like operator panels, Multi Panels (MP) are used for local machine operation and monitoring
- Content of message buffer is retained even when panel is disconnected, without batteries
- PLC functionality can be integrated directly into the MP277 platform with Option
- Their functionality can be expanded by the installation of additional Windows CE applications (Multi Panel and Panel options)
- SIMATIC MP 277 devices on the basis of Windows CE combine the rugged construction of Operator Panels with the flexibility of PCs
- Pixel-graphics 7.5" or 10.4" TFT display, color (64k colors)
- MP 277 8" and MP 277 10" Touch:  
Touch screen (analog/resistive)  
MP 277 8" Key:  
38 system keys, 26 user-configurable and freely inscribable function keys (18 with LEDs)  
MP 277 10" Key:  
38 system keys, 36 user-configurable and freely inscribable function keys (28 with LEDs)
- The MP 277 is also available with a stainless steel front panel and therefore meets the high requirements of, e.g. the food and beverage industry.
- All interfaces, e.g. MPI, PROFIBUS DP, USB, PROFINET (Ethernet TCP/IP), are onboard

### Benefits

- Integral component of Totally Integrated Automation (TIA): Increased productivity, minimum engineering overhead, reduction in life-cycle costs
- Modular expansion with options such as:
  - WinAC MP 277/Software PLC
  - WinCC flexible /Sm@rtAccess for communication between different SIMATIC HMI systems
  - WinCC flexible /Sm@rtService for remote maintenance and servicing of machines/plants via the intranet/Internet
  - WinCC flexible /OPC-Server for communication with applications from various manufacturers
  - Microsoft Pocket Internet Explorer (already included in scope of delivery)
  - WinCC flexible /ProAgent for selective and fast process fault diagnostics in systems and machines
  - WinCC flexible /Audit for user management (tracing and user operations)
- Reduction of service and commissioning costs through:
  - Backup/restore via Ethernet (TCP/IP), USB, MPI, PROFIBUS DP or optionally via SD/Multi Media Card
  - Remote download/upload of the configuration and firmware (Remote = automatic transfer recognition)
  - Specific drivers can be reloaded
  - Long service life of backlit display
- Graphic library available with off-the-shelf picture objects
- Can be used worldwide:
  - 32 languages can be configured (incl. Asian and Cyrillic character sets)
  - Up to 16 languages can be switched online
- Standard hardware and software interfaces for increasing flexibility:
  - SD/MultiMediaCard slot for memory expansions, backup/restore or additional interfaces
  - Ethernet (TCP/IP) for central data and project management
  - Ethernet; control link possible to SIMATIC S7
  - Standard Windows storage formats (CSV) for archives and recipes permit further processing with standard tools (e.g. Microsoft Excel)

### Application

These are used in the most diverse industries and applications and can be expanded in their applications with the Multi Panel options, e.g. by displaying HTML documents via the MS Pocket Internet Explorer, or by integrating the control functionality with WinAC MP 277.

The diskless and fanless design permits their use even where dust or vibration limits the use of a PC. Short power-up times mean the Multi Panels are soon ready to use.



# Operator panels

## Multi Panels – 270 series

### SIMATIC MP 277

#### Design

- Compact design with low mounting depth
- The front is resistant to various oils, greases and standard detergents
- Degree of protection IP65/NEMA 4x/NEMA 12 (front) or IP20 (rear)
- Plug-in terminals for 24 V DC power supply
- Interfaces:
  - RS 485/ RS 422 interface for process connections (PPI, MPI, PROFIBUS DP up to 12 Mbit/s)
  - USB for memory stick, mouse, keyboard, printer, barcode reader, UPS and downloading/uploading the configuration
  - Ethernet (TCP/IP) for exchanging data with a higher-level PC, connection of a network printer and downloading/uploading the configuration; a control link to SIMATIC S7 is possible
- Slot for SD/MultiMedia card

#### Function

- Display and modification of process parameters
- Function keys (for MP 277 8" Key and MP 277 10" Key only) for direct triggering of functions and actions. Up to 16 functions can be configured simultaneously on function keys.
- Process display:
  - VGA resolution (640 x 480 pixels) each with 64k colors for pixels
  - Vector graphics (various line and surface objects)
  - Dynamic positioning and dynamic showing/hiding of objects
  - Pixel-graphic displays, curves and bar displays
  - Presentation of up to 8 curves in a curve field; curve graphics with paging and zoom functions for access to the history and for flexible selection of the presentation time; reading ruler for determining the current values and displaying them in a table
  - Extensive symbol libraries (SIMATIC HMI symbol library)
  - Screen objects: Slider, gauge, clock
  - Cyclic function processing using timers
- Multiplex function for variables
- Signaling system
  - Bit messages and analog messages (limit value messages)
  - Freely-definable message classes (e.g. status/fault messages) for definition of acknowledgment response and display of message events
  - Status and fault messages with message history
  - Non-volatile, maintenance-free message buffer
  - Message window and message line

- Archiving of messages and process values (on CF/SD/ MultiMedia card/USB, etc., or network drives over Ethernet)
  - Various archive types: Circulating and sequence archive
  - Storage of archive data in standard Windows format (CSV)
  - Online evaluation of process value archives through trend curves
  - External processing using standard tools (MS Excel and MS Access) is possible
- Message log and shift log
- Print functions (see "Recommended printers")
- Language selection
  - 16 online languages, 32 configuration languages incl. Asian and Cyrillic character sets; language-dependent texts and graphics
- Recipe management
  - With additional data storage (on SD/MultiMedia card)
  - Online/offline processing on the panel
  - Storage of recipe data in standard Windows format (CSV)
  - External processing using standard tools (Microsoft Excel and Access) is possible
- TIA Runtime Functionalities
  - Direct keys (fast keys; with Key as keyboard image, with Touch freely customizable) used directly as PROFIBUS DP- or PROFINET IO input I/Os
  - With Key versions, LEDs additional as output I/Os
  - In addition, message process Alarm S with SIMATIC S7 and SIMOTION
  - Programming device functionality STATUS/FORCE-VAR in conjunction with SIMATIC S7
  - SIMATIC barcode scanner
  - Direct activation and evaluation of a SITOP UPS via USB
- Display selection from the PLC supports operator prompting from the PLC
- Presentation of HTML documents with MS Pocket Internet Explorer/WinCC flexible 2007 or higher
- Visual Basic Script, flexibility thanks to the implementation of new functions including linking to variables (comparison operations, loops, etc.)
- Help texts for process displays, messages, and variables
- Arithmetic functions
- Limit value monitoring for reliable process control of inputs and outputs
- Permanent window; Fixed top area of screen for outputting non-screen-specific information (e.g., important process values, date and time)



### Function (continued)

- Simple maintenance and configuration thanks to:
  - Save and load (Backup/Restore -> Image) of complete (incl. License Keys as of WinCC flexible 2007) panel on an SD/MultiMedia Card (optional), also possible with remote access (Sm@rtService)
  - Save and load (Backup/Restore -> Image) of complete (besides License Key) panel on a PC
  - Configuration download via Ethernet/USB/MPI/PROFIBUS DP/Modem/http
  - Configuration upload over Ethernet/USB/MPI/PROFIBUS DP/modem/http, the project is compressed during the download and transferred to the SD/MultiMedia Card or USB stick (optional)
  - Automatic Transfer Recognition (Remote Transfer)
  - Configuration simulation directly on the configuration computer
  - Import/export of all texts incl. messages in CSV format for translation using standard text processing programs
  - Centrally modifiable project-specific faceplates
- Template
  - Creation of screen templates:
  - Position-independent configuration of background objects
- Password system
  - User-oriented access protection according to requirements of specific sectors
  - Authentication with user ID and password
  - User-group-specific rights
- Service functions (optionally with "WinCC flexible /Sm@rtService")
  - Email generation
  - Remote control of the SIMATIC HMI system based on Internet Explorer
  - Web server with status HTML pages and control functions
- Client/server functions (optionally with "WinCC flexible /Sm@rtAccess")
  - Remote operation and monitoring from other SIMATIC HMI systems
  - Plant-wide requests for information and archiving of process data

### Configuration

The configuration is implemented using the SIMATIC WinCC Comfort engineering software. Projects generated with WinCC flexible can be migrated to WinCC.

### Applications/options

- WinAC MP software PLC for Multi Panels  
WinAC MP 277 option for MP 277 (software PLC similar to performance class CPU 315)  
The I/O can be connected via PROFIBUS DP
- Sm@rtServer:  
Remote control and monitoring as well as communication between different SIMATIC HMI systems
- OPC server:  
Communication with applications (e.g. MES, ERP, or applications in the office sector) from various manufacturers

### Integration

The MP 277 can be connected in certain cases simultaneously (multiprotocol-capable) to:

- SIMATIC S7-200/-300/-400
- SIMATIC WinAC Software/Slot PLC
- SIMATIC WinAC MP
- SIMATIC S5
- SIMATIC 505
- http communication with other SIMATIC HMI systems
- SIMOTION
- SINUMERIK  
(optionally with "SINUMERIK HMI copy license WinCC flexible CE"; "SINUMERIK HMI engineering package WinCC flexible" is additionally required for configuring;  
For further details, see Catalog NC 60)
- OPC XML server
- Third-party controllers
  - Allen Bradley
  - Mitsubishi
  - LG GLOFA GM
  - Modicon
  - GE-Fanuc
  - Omron
  - Telemecanique Uni-Telway
- Via Ethernet (TCP/IP) to a higher-level PC, with enabled network printer

### Note:

Further information can be found under "System interfaces".

# Operator panels

## Multi Panels – 270 series

### SIMATIC MP 277

#### Technical specifications

Product type designation	6AV6 643-0CB01-1AX1 8" Color Touch	6AV6 643-0CD01-1AX1 10" Color Touch	6AV6 643-0DB01-1AX1 8" Color Keyboard	6AV6 643-0DD01-1AX1 10" Color Keyboard
<b>Display</b>				
Size	7.5"	10.4"	7.5"	10.4"
Display type	TFT, 65536 colors	TFT, 65536 colors	TFT, 65536 colors	TFT, 65536 colors
Resolution (pixels)				
• Resolution (WxH in pixel)	640 x 480	640 x 480	640 x 480	640 x 480
Backlighting				
• MTBF backlighting (at 25 °C)	about 50,000 hours	about 50,000 hours	about 50,000 hours	about 50,000 hours
<b>Control elements</b>				
Control elements	Touch screen	Touch screen	Membrane keyboard	Membrane keyboard
Function keys, program-mable			26 function keys, 18 with LEDs	36 function keys, 28 with LEDs
Connection for mouse/keyboard/barcode reader	USB / USB / USB	USB / USB / USB	USB / USB / USB	USB / USB / USB
Keyboard				
• System keys			36	36
• Numeric/alphabetical input	Yes / Yes	Yes / Yes	Yes / Yes	Yes / Yes
Touch operation				
• Touch screen	analog, resistive	analog, resistive		
<b>Supply voltage</b>				
Input voltage				
• permissible range	+20.4 V to +28.8 V DC	+20.4 V to +28.8 V DC	+20.4 V to +28.8 V DC	+20.4 V to +28.8 V DC
• Supply voltage	24 V DC	24 V DC	24 V DC	24 V DC
<b>Processor</b>				
Processor	ARM	ARM	ARM	ARM
<b>Memory</b>				
Type	Flash / RAM	Flash / RAM	Flash / RAM	Flash / RAM
Usable memory for user data	6 MB usable memory for user data	6 MB usable memory for user data	6 MB usable memory for user data	6 MB usable memory for user data
<b>Type of output</b>				
LED colors			Green	Green
<b>Time of day</b>				
Clock				
• Type	Hardware clock, battery backup, synchronizable	Hardware clock, battery backup, synchronizable	Hardware clock, battery backup, synchronizable	Hardware clock, battery backup, synchronizable
<b>Interfaces</b>				
Interfaces	1 x RS422, 1 x RS485, 1 x Ethernet (RJ45)	1 x RS422, 1 x RS485, 1 x Ethernet (RJ45)	1 x RS422, 1 x RS485, 1 x Ethernet (RJ45)	1 x RS422, 1 x RS485, 1 x Ethernet (RJ45)
USB port	2 x USB	2 x USB	2 x USB	2 x USB
Multi Media Card slot	1 x Multi Media Card slot	1 x Multi Media Card slot	1 x Multi Media Card slot	1 x Multi Media Card slot
Industrial Ethernet				
• Industrial Ethernet interface	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)	1 x Ethernet (RJ45)
<b>Ambient conditions</b>				
Operating temperature				
• Operation	0 °C to +50 °C	0 °C to +50 °C	0 °C to +50 °C	0 °C to +50 °C
Storage/transport temperature				
• Transport, storage	-20 °C to +60 °C	-20 °C to +60 °C	-20 °C to +60 °C	-20 °C to +60 °C
Relative humidity				
• max. relative humidity	90 %	90 %	90 %	90 %
Mounting position	vertical	vertical	vertical	vertical
maximum permissible angle of inclination without external ventilation	+/- 35 °	+/- 35 °	+/- 35 °	+/- 35 °

**Technical specifications** (continued)

Product type designation	6AV6 643-0CB01-1AX1 8" Color Touch	6AV6 643-0CD01-1AX1 10" Color Touch	6AV6 643-0DB01-1AX1 8" Color Keyboard	6AV6 643-0DD01-1AX1 10" Color Keyboard
<b>Degree and class of protection</b>				
Front	IP65, NEMA 4x, (when installed)	IP65, NEMA 4x, (when installed)	IP65, NEMA 4x, (when installed)	IP65, NEMA 4x, (when installed)
Rear	IP20	IP20	IP20	IP20
<b>Standards, approvals, certificates</b>				
Certifications	CE, FM Class I Div. 2, UL, cULus, EX-Zone 22, NEMA 4x (Enclosure Type 4X, Type 12)	CE, FM Class I Div. 2, UL, cULus, EX-Zone 22, NEMA 4x (Enclosure Type 4X, Type 12)	CE, UL, cULus, NEMA 4x (Enclosure Type 4X, Type 12)	CE, FM Class I Div. 2, UL, cULus, EX-Zone 22, NEMA 4x (Enclosure Type 4X, Type 12)
<b>Operating systems</b>				
Operating system	Windows CE	Windows CE	Windows CE	Windows CE
<b>Configuration</b>				
Configuration software	see "Configuration overview" from page 2/3			
• Configuration tool				
<b>Functionality under WinCC flexible/WinCC (TIA portal)</b>				
Applications/options	see chapter 4: HMI software/SIMATIC WinCC flexible options and SIMATIC WinCC (TIA portal) options			
Number of Visual Basic Scripts	50	50	50	50
Task planner	Yes	Yes	Yes	Yes
Help system	Yes	Yes	Yes	Yes
Status/control	with SIMATIC S7	with SIMATIC S7	with SIMATIC S7	with SIMATIC S7
With alarm logging system (incl. buffer and acknowledgment)				
• Number of messages	4 000	4 000	4 000	4 000
• Bit messages	Yes	Yes	Yes	Yes
• Analog messages	Yes	Yes	Yes	Yes
• Message buffer	Ring buffer (n x 512 entries), retentive, maintenance-free	Ring buffer (n x 512 entries), retentive, maintenance-free	Ring buffer (n x 512 entries), retentive, maintenance-free	Ring buffer (n x 512 entries), retentive, maintenance-free
Recipes				
• Recipes	300	300	300	300
• Data records per recipe	500	500	500	500
• Entries per data record	1000	1000	1000	1000
• Recipe memory	64 KB integrated Flash, expandable	64 KB integrated Flash, expandable	64 KB integrated Flash, expandable	64 KB integrated Flash, expandable
Number of process images				
• Process images	500	500	500	500
• Variables	2 048	2 048	2 048	2 048
• Limit values	Yes	Yes	Yes	Yes
• Multiplexing	Yes	Yes	Yes	Yes
Image elements				
• Text objects	10,000 text elements	10,000 text elements	10,000 text elements	10,000 text elements
• Graphic object	Bit maps, icons, vector graphics	Bit maps, icons, vector graphics	Bit maps, icons, vector graphics	Bit maps, icons, vector graphics
• dynamic objects	Diagrams, bar graphs, sliders, analog display, invisible buttons	Diagrams, bar graphs, sliders, analog display, invisible buttons	Diagrams, bar graphs, sliders, analog display, invisible buttons	Diagrams, bar graphs, sliders, analog display, invisible buttons

# Operator panels

## Multi Panels – 270 series

### SIMATIC MP 277

#### Technical specifications (continued)

Product type designation	6AV6 643-0CB01-1AX1 8" Color Touch	6AV6 643-0CD01-1AX1 10" Color Touch	6AV6 643-0DB01-1AX1 8" Color Keyboard	6AV6 643-0DD01-1AX1 10" Color Keyboard
Lists				
• Text lists	500	500	500	500
• Graphic list	400	400	400	400
• Libraries	Yes	Yes	Yes	Yes
Archiving				
• Number of archives per project	20	20	20	20
• Number of measuring points per project	20	20	20	20
• Number of entries per archive	10 000	10 000	10 000	10 000
• Memory location	SD and Multi Media Card	SD and Multi Media Card	SD and Multi Media Card	SD and Multi Media Card
Security				
• Number of user groups	50	50	50	50
• Passwords exportable	Yes	Yes	Yes	Yes
• Number of user rights	32	32	32	32
Data carrier support				
• Multimedia Card	Yes	Yes	Yes	Yes
Recording				
• Recording/Printing	Alarms, report (shift report), color print, hardcopy	Alarms, report (shift report), color print, hardcopy	Alarms, report (shift report), color print, hardcopy	Alarms, report (shift report), color print, hardcopy
Fonts				
• Keyboard fonts	US American (English)	US American (English)	US American (English)	US American (English)
Languages				
• Configuration languages	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H
• Character sets	Tahoma, Arial, Courier New, WinCC flexible Standard, symbol languages, all freely scalable	Tahoma, Arial, Courier New, WinCC flexible Standard, symbol languages, all freely scalable	Tahoma, Arial, Courier New, WinCC flexible Standard, symbol languages, all freely scalable	Tahoma, Arial, Courier New, WinCC flexible Standard, symbol languages, all freely scalable
Transfer (upload/download)				
• Transfer of configuration	MPI/PROFIBUS DP, USB, Ethernet, automatic transfer recognition	MPI/PROFIBUS DP, USB, Ethernet, automatic transfer recognition	MPI/PROFIBUS DP, USB, Ethernet, automatic transfer recognition	MPI/PROFIBUS DP, USB, Ethernet, automatic transfer recognition
Process coupling				
• Connection to controller	see "System interfaces" from page 2/178			
Expandability/openness				
• Open Platform Program	Yes	Yes	Yes	Yes
I/O				
I/O devices	Printer, barcode reader	Printer, barcode reader	Printer, barcode reader	Printer, barcode reader
Dimensions and weight				
Dimensions				
• Front of enclosure (W x H)	240 mm x 180 mm	325 mm x 263 mm	352 mm x 221 mm	483 mm x 310 mm
• Mounting cutout/device depth (W x H)	226 mm x 166 mm / 60 mm device depth	310 mm x 248 mm / 61 mm device depth	338 mm x 206 mm / 61 mm device depth	434 mm x 291 mm / 60 mm device depth
Weight				
• Weight	1.61 kg	2.65 kg	2.25 kg	4.95 kg

# Operator panels

## Multi Panels – 270 series

SIMATIC MP 277

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Ordering data	Order No.	Order No.	
<b>SIMATIC MP 277</b> Multi Panel (including mounting accessories) with <ul style="list-style-type: none"><li>• 8" color TFT display, Touch</li><li>• 10" color TFT display, Touch</li><li>• 8" color TFT display, keyboard</li><li>• 10" color TFT display, keyboard</li></ul>	<b>6AV6 643-0CB01-1AX1</b> <b>6AV6 643-0CD01-1AX1</b> <b>6AV6 643-0DB01-1AX1</b> <b>6AV6 643-0DD01-1AX1</b>	<b>Starter package 636K WinAC MP</b> Consisting of: <ul style="list-style-type: none"><li>• SIMATIC MP 277 8" Key with mounting accessories, mounting gasket, and power connector</li><li>• SIMATIC WinAC MP incl. single license on USB stick and electronic documentation</li><li>• SD Card 256 KB (blank)</li><li>• ET200M incl.<ul style="list-style-type: none"><li>- 32 DI, 16 DO, 8 AI, 2 AO</li><li>- Front connector, bus connector, and mounting rail</li></ul></li></ul>	<b>6AV6 652-3LD01-1AA0</b>
<b>SIMATIC MP 277 8" Touch Starter Package</b> Consisting of: <ul style="list-style-type: none"><li>• SIMATIC MP 277 8" Touch</li><li>• SIMATIC WinCC flexible 2007</li><li>• SIMATIC HMI Manual Collection</li><li>• MPI cable, 5 m (for download and test purposes only)</li><li>• PC/PPI cable (RS 232)</li></ul>	<b>6AV6 652-3MB01-0AA0</b>	<b>Starter package 636T WinAC MP</b> Consisting of: <ul style="list-style-type: none"><li>• SIMATIC MP 277 10" Touch with mounting accessories, mounting seal, power supply connector</li><li>• SIMATIC WinAC MP including single license on a USB flash drive and electronic documentation</li><li>• SD Card 256 KB (blank)</li><li>• ET200M incl.<ul style="list-style-type: none"><li>- 32 DI, 16 DO, 8 AI, 2 AO</li><li>- Front connector, bus connector, and mounting rail</li></ul></li></ul>	<b>6AV6 652-3PD01-1AA0</b>
<b>SIMATIC MP 277 10" Touch Starter Package</b> Consisting of: <ul style="list-style-type: none"><li>• SIMATIC MP 277 10" Touch</li><li>• SIMATIC WinCC flexible 2007</li><li>• SIMATIC HMI Manual Collection</li><li>• MPI cable, 5 m (for download and test purposes only)</li><li>• PC/PPI cable (RS232)</li></ul>	<b>6AV6 652-3PB01-0AA0</b>	<b>Complete pre-assembled packages SIMATIC MP 277 with WinAC MP 2007</b>	
<b>Promotion package</b> Consisting of: <ul style="list-style-type: none"><li>• SIMATIC MP 277 10" Touch</li><li>• SIMATIC THIN CLIENT 10" Touch</li><li>• SIMATIC WinCC flexible 2008</li><li>• SIMATIC HMI Manual Collection</li><li>• Ethernet cable, 2 m</li><li>• MPI cable, 5 m (for download and test purposes only)</li><li>• Sm@rtAccess (Single License)</li></ul>	<b>6AV6 652-3PB01-2AA0</b>	<b>Package MP 277 8" Touch</b> <ul style="list-style-type: none"><li>• MP 277 8" Touch</li><li>• Electronic documentation</li><li>• Single license for MP 277 on USB flash drive<sup>1)</sup></li><li>• Standard SD Card (empty)</li></ul>	<b>6AV6 652-3MC01-1AA0</b>
<b>Starter package 635K WinAC MP</b> Consisting of: <ul style="list-style-type: none"><li>• SIMATIC MP 277 8" Key with mounting accessories, mounting seal, power supply connector</li><li>• SIMATIC WinAC MP incl. single license on USB stick and electronic documentation</li><li>• SD card 256 KB (empty)</li><li>• ET200M incl.<ul style="list-style-type: none"><li>- 32 DI, 16 DO, 8 AI, 2 AO</li><li>- FM350-2 8-channel counter</li><li>- Front connector, bus connector, and mounting rail</li></ul></li></ul>	<b>6AV6 652-3LD01-1AA1</b>	<b>Package MP 277 8" Key</b> <ul style="list-style-type: none"><li>• MP 277 8" Key</li><li>• Electronic documentation</li><li>• Single license for MP 277 on USB flash drive<sup>1)</sup></li><li>• Standard SD Card (empty)</li></ul>	<b>6AV6 652-3LC01-1AA0</b>
		<b>Package MP 277 10" Touch</b> <ul style="list-style-type: none"><li>• MP 277 10" Touch</li><li>• Electronic documentation</li><li>• Single license for MP 277 on USB flash drive<sup>1)</sup></li><li>• Standard SD Card (empty)</li></ul>	<b>6AV6 652-3PC01-1AA0</b>
		<b>Package MP 277 10" Key</b> <ul style="list-style-type: none"><li>• MP 277 10" Key</li><li>• Electronic documentation</li><li>• Single license for MP 277 on USB flash drive<sup>1)</sup></li><li>• Standard SD Card (empty)</li></ul>	<b>6AV6 652-3NC01-1AA0</b>

E: Subject to export regulations: AL: 91999 and ECCN: 5D002ENCU

<sup>1)</sup> Can only be used for license handling

# Operator panels

## Multi Panels – 270 series

### SIMATIC MP 277

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Ordering data	Order No.	Order No.
<b>Configuration</b> With SIMATIC WinCC flexible or SIMATIC WinCC	see HMI Software	<b>WinCC flexible Compact/Standard/Advanced User Manual</b> <ul style="list-style-type: none"> <li>• German</li> <li>• English</li> <li>• French</li> <li>• Italian</li> <li>• Spanish</li> </ul>
<b>Configuration set</b> D Consisting of: <ul style="list-style-type: none"> <li>• WinCC flexible Standard engineering software</li> <li>• Documentation DVD, 5 languages (English, French, German, Italian, Spanish)</li> <li>• RS 232 cable (5 m)</li> <li>• MPI cable, 5 m</li> </ul>	6AV6 622-0BA01-0AA0	6AV6 691-1AB01-3AA0 6AV6 691-1AB01-3AB0 6AV6 691-1AB01-3AC0 6AV6 691-1AB01-3AD0 6AV6 691-1AB01-3AE0
<b>Applications/Options</b> For configuration with WinCC flexible <ul style="list-style-type: none"> <li>• WinCC flexible /Sm@rtAccess</li> <li>• WinCC flexible /Sm@rtService</li> <li>• WinCC flexible /OPC server</li> <li>• WinCC flexible /ProAgent</li> <li>• WinCC flexible /Audit</li> <li>• WinAC MP 2007/Software PLC</li> </ul>	see HMI Software	<b>User Manual WinCC flexible Communication</b> <ul style="list-style-type: none"> <li>• German</li> <li>• English</li> <li>• French</li> <li>• Italian</li> <li>• Spanish</li> </ul>
<b>Documentation (to be ordered separately)</b> <b>MP 277 Operating Instructions</b> <ul style="list-style-type: none"> <li>• German</li> <li>• English</li> <li>• French</li> <li>• Italian</li> <li>• Spanish</li> </ul>	6AV6 691-1DJ01-0AA0 6AV6 691-1DJ01-0AB0 6AV6 691-1DJ01-0AC0 6AV6 691-1DJ01-0AD0 6AV6 691-1DJ01-0AE0	<b>SIMATIC HMI Manual Collection B</b> Electronic documentation, on DVD 5 languages (English, French, German, Italian and Spanish); contains: all currently available user manuals, manuals and communication manuals for SIMATIC HMI
		<b>Accessories</b> see HMI accessories

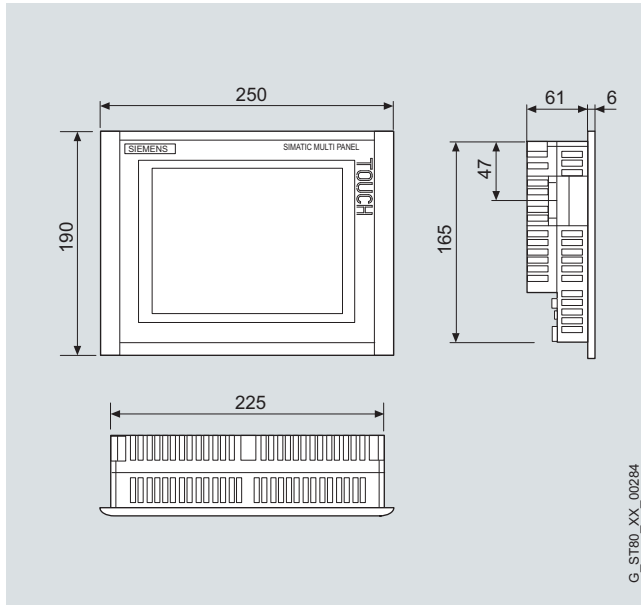
B: Subject to export regulations: AL: N and ECCN: EAR99S

D: Subject to export regulations: AL: N and ECCN: 5D992

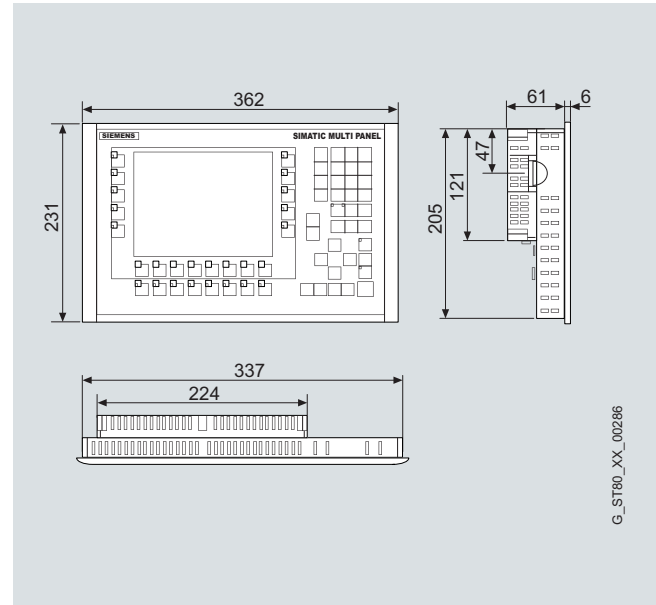
E: Subject to export regulations: AL: 9I999 and ECCN: 5D002ENCU

### Dimensional drawings

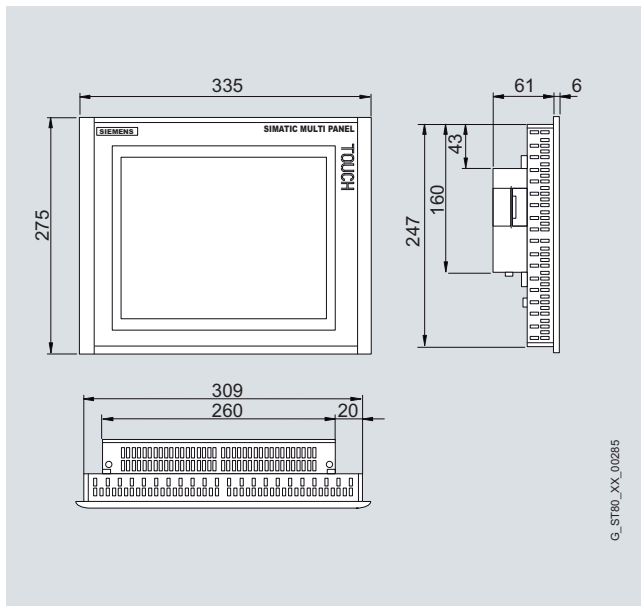
All specifications in mm (tolerance  $\pm 1$  mm). Panel cutout see technical specifications.



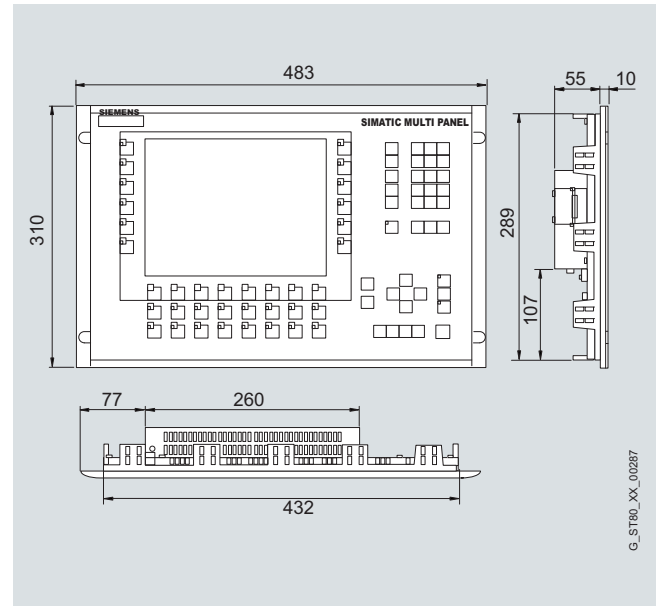
MP 277 8" Touch



MP 277 8" Key



MP 277 10" Touch



MP 277 10" Key

### More information

Additional information is available on the Internet at:

[www.siemens.com/simatic-multi-panels](http://www.siemens.com/simatic-multi-panels)

#### Note:

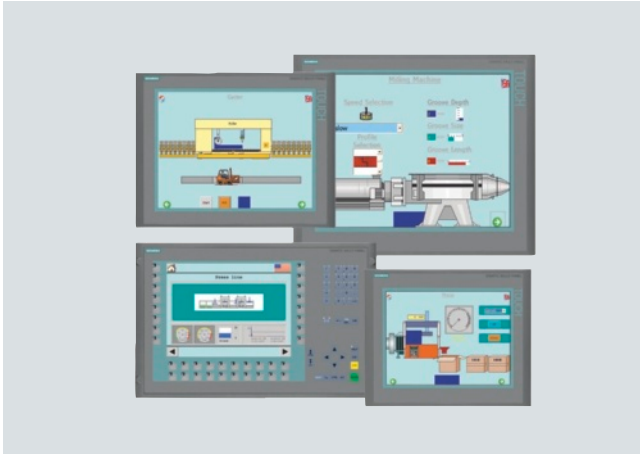
Do you require a specific modification or extension to the products described here? Under "Customized products", you can find information about additional and generally available products for the sector, and about the possibilities for customized modification and adaptation.

# Operator panels

## Multi Panels – 370 series

### SIMATIC MP 377

#### Overview



- Like operator panels, Multi Panels (MP) are used for local machine operation and monitoring
- Their functionality can be expanded by installing additional Windows CE applications (Multi Panel and Panel options)
- SIMATIC MP 377 devices on the basis of Windows CE combine the rugged construction of Operator Panels with the flexibility of PCs
- PLC functionality can be integrated directly into the MP 377 platform with Option
- Pixel-graphics 12.1" or 15" or 19" TFT display, color (64k colors)
- [MP 377 12" Touch](#), [MP 377 15" Touch](#) and [MP 377 19" Touch](#): Touch screen (analog/resistive)
- [MP 377 12" Key](#):  
38 system keys, 36 user-configurable and freely inscribable function keys (36 with LEDs)
- [SIMATIC MP 377 PRO 15" Touch](#):  
with a rugged and very compact aluminum enclosure, fully enclosed with IP65 protection and therefore suitable for harsh ambient conditions.  
All interfaces, e.g. MPI, PROFIBUS DP, USB, PROFINET (Ethernet TCP/IP), are onboard
- [SIMATIC MP 377 INOX 15" Touch \(stainless steel front\)](#):  
The MP 377 15" Touch is also available with a stainless steel front (EN 1672-2) and as Fully Enclosed HMI (IP65). These versions expand the application area of the Multi Panel 377 for special applications, ambient conditions, and special sectors (e.g. food, beverages and tobacco industries).

#### Benefits

- Integral component of Totally Integrated Automation (TIA): Increase of productivity, minimization of engineering overhead, reduction of lifecycle costs
- Modular expansion capability with options such as:
  - Software PLC SIMATIC WinAC MP
  - WinCC Sm@rtServer for communication between different SIMATIC HMI systems
  - WinCC Sm@rtServer for remote maintenance and servicing of machines/plants via the Internet/Intranet
  - WinCC OPC server for communication with applications from different manufacturers
  - MS Pocket Internet Explorer 6.0 (already included in the scope of delivery)
  - MS Multimedia Player (already included in the scope of delivery)
  - MS Viewer for Word, Excel and PDF files (already included in scope of delivery)
- Reduction of service and commissioning costs due to:
  - Backup/restore via Ethernet (TCP/IP), USB, MPI, PROFIBUS DP or optionally via CF/SD/Multimedia Card
  - Remote download/upload for configuration and firmware
  - Specific drivers can be reloaded
  - Long service life of backlit display
- Graphic library with preconfigured screen objects
- Can be used worldwide:
  - 32 languages can be configured (incl. Asian and Cyrillic character sets)
  - Up to 16 languages can be switched online
- Standard hardware and software interfaces for increasing flexibility:
  - CF Card slot and SD/Multimedia Card slot for language expansions, backup/restore
  - Ethernet (TCP/IP) for central data and project management and control link possible to SIMATIC S7
  - Standard Windows storage formats (CSV) for archives and recipes permit further processing with standard tools (e. g. Microsoft Excel)



### Application

The Multi Panels SIMATIC MP 377 can be used wherever machines and systems are operated and monitored locally – whether in production, process or building automation. These are used in the most diverse industries and applications and can be expanded in their applications with the Multi Panel options, e.g. by displaying HTML documents via the MS Pocket Internet Explorer, or by integrating the control functionality with WinAC MP 377.

Windows CE meets the basic prerequisites for application in rough industrial environments. The diskless and fanless design permits their use even where dust or vibration limits the operation of a PC. Short power-up times mean the Multi Panels are sooner ready to use.

### Design

- Compact design with low mounting depth
- The front is resistant to various oils, greases and standard detergents
- Degree of protection IP65/NEMA 4x/NEMA 12 (front) or IP20 (rear)
- Plug-in terminals for 24 V DC power supply
- Interfaces:
  - RS 485/RS 422 interface for process connections (MPI, PROFIBUS DP up to 12 Mbit/s)
  - USB for mouse, keyboard, printer, barcode reader, and downloading/uploading the configuration
  - Ethernet (TCP/IP) for exchanging data with a higher-level PC, connection of a network printer and downloading/uploading the configuration; a control link to SIMATIC S7 is possible
- Slot for CompactFlash card (CF card)
- Slot for SD/multimedia card
- Retentive memory for WinAC MP 377 data (data, timers, counters and bit memories)

### Function

- Display and changing of process parameters
- Function keys (for MP 377 12" Keys) for direct triggering of functions and actions. Up to 16 functions can be configured simultaneously on function keys. The function keys can be used directly as PROFIBUS DP input I/O.
- Process display:
  - Vector graphic (various line and plane objects)
  - Dynamic positioning and dynamic showing/hiding of objects
  - Fully-graphical displays, plots, and bar graph display
  - Display of up to 8 trends per trend field; trend curve graphic with scroll and zoom functions for accessing the history and flexible selection of the representation period;
  - read ruler for determining current values and display in a table
  - Extensive symbol libraries (SIMATIC HMI symbol library)
  - Screen objects: Slider, gauge, clock
  - Cyclic function processing by alarm clock
- Multiplex function for variables
- Signaling system
  - Discrete alarms and analog messages (limit value messages) as well as the Alarm S message frame procedure for SIMATIC S7 and SIMOTION
  - Freely-definable message classes (e. g. status/fault messages) for definition of acknowledgment response and display of message events
  - Status and fault messages with message history
  - Pre-configured message image, message window and message line
- Archiving of messages and process values (on CF/SD/Multi-Media card/USB, etc., or network drives over Ethernet)
  - Various archive types: Circulating and sequence archive
  - Storage of archive data in standard Windows format (CSV)
  - Online evaluation of process value archives using trend curves
  - External evaluation using standard tools (MS Excel, MS Access) is possible
- Alarm log and shift log
- Print functions (see "Recommended printers")
- Language switching
  - 16 online languages, 32 configuration languages incl. Asiatic and Cyrillic character sets
- Recipe management
  - With additional data storage (on CF/SD/Multimedia Card/USB flash drive, etc.)
  - Online/offline processing on the panel
  - Storage of recipe data in standard Windows format (CSV)
  - External processing using standard tools (Microsoft Excel and Access) is possible

# Operator panels

## Multi Panels – 370 series

### SIMATIC MP 377

2

#### Function (continued)

- Programming device functionality STATUS/ FORCE-VAR in conjunction with SIMATIC S5 and SIMATIC S7
- Display selection from the PLC supports operator prompting from the PLC
- Presentation of HTML documents with MS Pocket Internet Explorer
- Visual Basic Script, flexibility thanks to the implementation of new functions including linking to variables (comparison operations, loops, etc.)
- Help texts for process pictures, alarms, and tags
- Arithmetic functions
- Limit value monitoring for reliable process control of inputs and outputs
- Permanent window;
  - Fixed area of screen for outputting non-screen-specific information (e.g. important process values, date and time)
  - Permanent window expanded by template concept for creating screen templates
- Simple maintenance and configuration thanks to:
  - Backup and restoring of configuration, operating system, data records, and firmware on an optional memory card (CF/SD/Multimedia Card) or via the Ethernet
  - Backup and restoration of the configuration, operating system, data records and firmware on a PC
  - Download/upload of configuration via Ethernet/USB/MPI/PROFIBUS DP/modem and CF or SD/Multimedia Card
  - Automatic transfer detection
  - Configuration simulation directly on the configuration computer
- Import/export of all texts incl. messages in CSV format for translation using standard text processing programs
- Centrally modifiable project-specific faceplates
- User administration (security)
  - User-oriented access protection according to requirements of specific sectors
  - Authentication with user ID and password
  - User-group-specific rights
- Visual Basic Runtime object model
- Service functions (optionally with "WinCC Sm@rtServer")
  - Email generation
  - Remote control of the SIMATIC HMI system based on Internet Explorer
  - Web server with status HTML pages and control functions
- Client/server functions (optionally with "WinCC Sm@rtServer")
  - Remote operation and monitoring from other SIMATIC HMI systems
  - Plant-wide requests for information and archiving of process data

#### Integration

More detailed information on this topic can be found under "System interfaces with WinCC flexible" or "System interfaces with WinCC (TIA Portal)".

#### Configuration

The configuration is implemented using the SIMATIC WinCC flexible or WinCC engineering software (TIA Portal).

More detailed information on this topic can be found under "HMI Software".

#### Applications/Options

More detailed information on this topic can be found under "HMI Software".

### Technical specifications

Product type designation	6AV6 644-0AA01-2AX0 12" Touch	6AV6 644-0BA01-2AX1 12" Key	6AV6 644-0AB01-2AX0 15" Touch	6AV6 644-0AC01-2AX1 19" Touch
<b>Display</b>				
Size	12.1" (246 mm x 184.5 mm)	12.1" (246 mm x 184.5 mm)	15" (304.1 mm x 228.1 mm)	19" (376.3 mm x 301.1 mm)
Display type	TFT, 65536 colors	TFT, 65536 colors	TFT, 65536 colors	TFT, 65536 colors
Resolution (pixels)				
• Resolution (WxH in pixel)	800 x 600	800 x 600	1024 x 768	1280 x 1024
Backlighting				
• MTBF backlighting (at 25 °C)	about 50,000 hours	about 50,000 hours	about 50,000 hours	about 50,000 hours
<b>Control elements</b>				
Control elements	Touch screen	Membrane keyboard	Touch screen	Touch screen
Function keys, program-mable		36 function keys, 36 with LEDs		
Connection for mouse/keyboard/barcode reader	USB / USB / USB	USB / USB / USB	USB / USB / USB	USB / USB / USB
Keyboard				
• System keys		38		
• Numeric/alphabetical input	Yes / Yes	Yes / Yes	Yes / Yes	Yes / Yes
Touch operation				
• Touch screen	analog, resistive		analog, resistive	analog, resistive
<b>Supply voltage</b>				
Input voltage				
• permissible range	+19.2 V to +28.8 V DC	+19.2 V to +28.8 V DC	+19.2 V to +28.8 V DC	+19.2 V to +28.8 V DC
• Supply voltage	24 V DC	24 V DC	24 V DC	24 V DC
<b>Input current</b>				
Rated current	1.5 A	1.5 A	1.9 A	2.5 A
<b>Memory</b>				
Type	Flash / RAM	Flash / RAM	Flash / RAM	Flash / RAM
Usable memory for user data	12288 KB usable memory for user data / 12288 KB additional memory for options	12288 KB usable memory for user data / 12288 KB additional memory for options	12288 KB usable memory for user data / 12288 KB additional memory for options	12288 KB usable memory for user data / 12288 KB additional memory for options
<b>Type of output</b>				
LED colors		Red, green		
Acoustics	WAV sound signal	WAV sound signal	WAV sound signal	WAV sound signal
<b>Time of day</b>				
Clock				
• Type	Hardware clock, battery backup, synchronizable	Hardware clock, battery backup, synchronizable	Hardware clock, battery backup, synchronizable	Hardware clock, battery backup, synchronizable
<b>Interfaces</b>				
Interfaces	1 x RS422, 1 x RS485, 2 x Ethernet (RJ45)	1 x RS422, 1 x RS485, 2 x Ethernet (RJ45)	1 x RS422, 1 x RS485, 2 x Ethernet (RJ45)	1 x RS422, 1 x RS485, 2 x Ethernet (RJ45)
USB port	2 x USB	2 x USB	2 x USB	2 x USB
CF card slot	1 x CF card slot	1 x CF card slot	1 x CF card slot	1 x CF card slot
Multi Media Card slot	1 x Multi Media Card slot	1 x Multi Media Card slot	1 x Multi Media Card slot	1 x Multi Media Card slot
Industrial Ethernet				
• Industrial Ethernet interface	2 x Ethernet (RJ45)	2 x Ethernet (RJ45)	2 x Ethernet (RJ45)	2 x Ethernet (RJ45)
<b>Protocols</b>				
Protocols (terminal link)				
• Sm@rtAccess	Yes	Yes	Yes	Yes
<b>EMC</b>				
Emission of radio interference acc. to EN 55 011				
• Emission of radio interferences acc. to EN 55 011 (limit class A)	Yes	Yes	Yes	Yes

# Operator panels

## Multi Panels – 370 series

### SIMATIC MP 377

#### Technical specifications (continued)

Product type designation	6AV6 644-0AA01-2AX0 12" Touch	6AV6 644-0BA01-2AX1 12" Key	6AV6 644-0AB01-2AX0 15" Touch	6AV6 644-0AC01-2AX1 19" Touch
<b>Ambient conditions</b>				
Operating temperature • Operation • (vertical installation)	0 °C to +50 °C	0 °C to +50 °C	0 °C to +50 °C	0 °C to +50 °C
Storage/transport temper- ature • Transport, storage	-20 °C to +60 °C	-20 °C to +60 °C	-20 °C to +60 °C	-20 °C to +60 °C
Relative humidity • max. relative humidity	90 %	90 %	90 %	90 %
maximum permissible angle of inclination without external ventilation	+/- 35 °	+/- 35 °	+/- 35 °	+/- 35 °
<b>Degree and class of protection</b>				
Front	IP65, NEMA 4, NEMA 12 (when installed)	IP65, NEMA 4, NEMA 12 (when installed)	IP65, NEMA 4, NEMA 12 (when installed)	IP65, NEMA 4, NEMA 12 (when installed)
Rear	IP20	IP20	IP20	IP20
<b>Standards, approvals, certificates</b>				
Certifications	CE, FM Class I Div. 2, cULus, EX-Zone 22, C-TICK, NEMA 4, NEMA 12	CE, cULus, C-TICK, NEMA 4, NEMA 12	CE, FM Class I Div. 2, cULus, EX-Zone 22, C-TICK, NEMA 4, NEMA 12	FM Class I Div. 2, cULus, EX-Zone 22, C-TICK, NEMA 4, NEMA 12
<b>Operating systems</b>				
Operating system	Windows CE	Windows CE	Windows CE	Windows CE
<b>Configuration</b>				
Configuration software • Configuration tool	see "Configuration overview" from page 2/3			
<b>Functionality under WinCC flexible/WinCC (portal)</b>				
Applications/options	see chapter 4: HMI software/SIMATIC WinCC flexible options and SIMATIC WinCC (TIA portal) options			
Number of Visual Basic Scripts	100	100	100	100
Task planner	Yes	Yes	Yes	Yes
Help system	Yes	Yes	Yes	Yes
Status/control	with SIMATIC S7	with SIMATIC S7	with SIMATIC S7	with SIMATIC S7
With alarm logging system (incl. buffer and acknowl- edgment) • Number of messages • Bit messages • Analog messages • Message buffer	4 000 Yes Yes Ring buffer (n x 1024 entries), retentive, maintenance-free	4 000 Yes Yes Ring buffer (n x 1024 entries), retentive, maintenance-free	4 000 Yes Yes Ring buffer (n x 1024 entries), retentive, maintenance-free	4 000 Yes Yes Ring buffer (n x 1024 entries), retentive, maintenance-free
Recipes • Recipes • Data records per recipe • Entries per data record • Recipe memory	500 1 000 1000 128 KB integrated Flash, expandable	500 1 000 1000 128 KB integrated Flash, expandable	500 1 000 1000 128 KB integrated Flash, expandable	500 1 000 1000 128 KB integrated Flash, expandable
Number of process images • Process images • Variables • Limit values • Multiplexing	500 2 048 Yes Yes	500 2 048 Yes Yes	500 2 048 Yes Yes	500 2 048 Yes Yes

**Technical specifications** (continued)

Product type designation	6AV6 644-0AA01-2AX0 12" Touch	6AV6 644-0BA01-2AX1 12" Key	6AV6 644-0AB01-2AX0 15" Touch	6AV6 644-0AC01-2AX1 19" Touch
Image elements				
• Text objects	30,000 text elements	30,000 text elements	30,000 text elements	30,000 text elements
• Graphic object	Bit maps, icons, vector graphics	Bit maps, icons, vector graphics	Bit maps, icons, vector graphics	Bit maps, icons, vector graphics
• dynamic objects	Diagrams, bar graphs, sliders, analog display, invisible buttons	Diagrams, bar graphs, sliders, analog display, invisible buttons	Diagrams, bar graphs, sliders, analog display, invisible buttons	Diagrams, bar graphs, sliders, analog display, invisible buttons
Lists				
• Text lists	500	500	500	500
• Graphic list	500	500	500	500
• Libraries	Yes	Yes	Yes	Yes
Archiving				
• Number of archives per project	50	50	50	50
• Number of measuring points per project	50	50	50	50
• Number of entries per archive	50 000	50 000	50 000	50 000
• Archiving types	Sequence archive, short-term archive, alarm log, process value archive	Sequence archive, short-term archive, alarm log, process value archive	Sequence archive, short-term archive, alarm log, process value archive	Sequence archive, short-term archive, alarm log, process value archive
• Memory location	CF card, SD/MMC card, Ethernet, USB memory stick	CF card, SD/MMC card, Ethernet, USB memory stick	CF card, SD/MMC card, Ethernet, USB memory stick	CF card, SD/MMC card, Ethernet, USB memory stick
• Data storage format	CSV file, readable, e.g. with MS Excel, MS Access	CSV file, readable, e.g. with MS Excel, MS Access	CSV file, readable, e.g. with MS Excel, MS Access	CSV file, readable, e.g. with MS Excel, MS Access
• external evaluation	Can be read, e.g., in MS Excel, MS Access, etc.	Can be read, e.g., in MS Excel, MS Access, etc.	Can be read, e.g., in MS Excel, MS Access, etc.	Can be read, e.g., in MS Excel, MS Access, etc.
• Size of archive	Depending on free memory on ext. card/stick or on free hard disk memory via network drive	Depending on free memory on ext. card/stick or on free hard disk memory via network drive	Depending on free memory on ext. card/stick or on free hard disk memory via network drive	Depending on free memory on ext. card/stick or on free hard disk memory via network drive
• Online evaluation	Using trend curves	Using trend curves	Using trend curves	Using trend curves
Security				
• Number of user groups	50	50	50	50
• Passwords exportable	Yes	Yes	Yes	Yes
• Number of user rights	32	32	32	32
Data carrier support				
• CF card	Yes	Yes	Yes	Yes
• Multimedia Card	Yes	Yes	Yes	Yes
Recording				
• Recording/Printing	Alarms, report (shift report), color print, hardcopy	Alarms, report (shift report), color print, hardcopy	Alarms, report (shift report), color print, hardcopy	Alarms, report (shift report), color print, hardcopy
• Printer driver	ESC/P2, PCL3/PCL6	ESC/P2, PCL3/PCL6	ESC/P2, PCL3/PCL6	ESC/P2, PCL3/PCL6
Fonts				
• Keyboard fonts	US American (English)	US American (English)	US American (English)	US American (English)
Languages				
• Configuration languages	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H	D, GB, F, I, E, CHN "traditional", CHN "simplified", DK, FIN, GR, J, KP / ROK, NL, N, PL, P, RUS, S, CZ / SK, TR, H
• Character sets	Tahoma, Arial, Courier New, symbol languages, 4 additional character sets can be loaded, all freely scalable	Tahoma, Arial, Courier New, symbol languages, 4 additional character sets can be loaded, all freely scalable	Tahoma, Arial, Courier New, symbol languages, 4 additional character sets can be loaded, all freely scalable	Tahoma, Arial, Courier New, symbol languages, 4 additional character sets can be loaded, all freely scalable

# Operator panels

## Multi Panels – 370 series

### SIMATIC MP 377

#### Technical specifications (continued)

Product type designation	6AV6 644-0AA01-2AX0 12" Touch	6AV6 644-0BA01-2AX1 12" Key	6AV6 644-0AB01-2AX0 15" Touch	6AV6 644-0AC01-2AX1 19" Touch
Transfer (upload/download) • Transfer of configuration	MPI/PROFIBUS DP, serial, USB, Ethernet, by means of external storage medium, automatic transfer recognition	MPI/PROFIBUS DP, serial, USB, Ethernet, by means of external storage medium, automatic transfer recognition	MPI/PROFIBUS DP, serial, USB, Ethernet, by means of external storage medium, automatic transfer recognition	MPI/PROFIBUS DP, serial, USB, Ethernet, by means of external storage medium, automatic transfer recognition
Process coupling • Connection to controller	see "System interface" from page 2/178			
Expandability/openness • Open Platform Program	Yes	Yes	Yes	Yes
<b>I/O</b>				
I/O devices	Printer, card reader, barcode reader	Printer, card reader, barcode reader	Printer, card reader, barcode reader	Printer, card reader, barcode reader
<b>Dimensions and weight</b>				
Dimensions				
• Front of enclosure (W x H)	335 mm x 275 mm	483 mm x 310 mm	400 mm x 310 mm	483 mm x 400 mm
• Mounting cutout/device depth (W x H)	310 mm x 248 mm / 72 mm device depth	450 mm x 290 mm / 59 mm device depth	367 mm x 289 mm / 72 mm device depth	449 mm x 379 mm / 75 mm device depth
Weight				
• Weight	3.8 kg	5.5 kg	4.7 kg	7.7 kg

Ordering data	Order No.	Order No.
<b>SIMATIC MP 377</b> Multi Panel (including mounting accessories) with <ul style="list-style-type: none"> <li>• 12" color TFT display, Touch</li> <li>• 12" color TFT display, Key</li> <li>• 15" color TFT display, Touch</li> <li>• 19" color TFT display, Touch</li> </ul>	E <b>6AV6 644-0AA01-2AX0</b> E <b>6AV6 644-0BA01-2AX1</b> E <b>6AV6 644-0AB01-2AX0</b> E <b>6AV6 644-0AC01-2AX1</b>	<b>Documentation</b> <i>(to be ordered separately)</i> <b>MP 377 Operating Instructions</b> <ul style="list-style-type: none"> <li>• German <b>6AV6 691-1DR01-0AA0</b></li> <li>• English <b>6AV6 691-1DR01-0AB0</b></li> <li>• French <b>6AV6 691-1DR01-0AC0</b></li> <li>• Italian <b>6AV6 691-1DR01-0AD0</b></li> <li>• Spanish <b>6AV6 691-1DR01-0AE0</b></li> </ul>
<b>Complete pre-assembled packages: SIMATIC MP 377 with WinAC MP 2007</b> <b>Package MP 377 12" Touch</b> <ul style="list-style-type: none"> <li>• MP 377 12" Touch</li> <li>• Single license for MP 377 on USB flash drive<sup>1)</sup></li> <li>• Standard Multimedia Card (empty)</li> </ul>	E <b>6AV6 652-4FC01-2AA0</b>	<b>WinCC flexible Compact/Standard/Advanced User Manual</b> <ul style="list-style-type: none"> <li>• German <b>6AV6 691-1AB01-3AA0</b></li> <li>• English <b>6AV6 691-1AB01-3AB0</b></li> <li>• French <b>6AV6 691-1AB01-3AC0</b></li> <li>• Italian <b>6AV6 691-1AB01-3AD0</b></li> <li>• Spanish <b>6AV6 691-1AB01-3AE0</b></li> </ul>
<b>Package MP 377 12" Key</b> <ul style="list-style-type: none"> <li>• MP 377 12" Key</li> <li>• Single license for MP 377 on USB flash drive<sup>1)</sup></li> <li>• Standard Multimedia Card (empty)</li> </ul>	E <b>6AV6 652-4EC01-2AA0</b>	<b>User Manual WinCC flexible Communication</b> <ul style="list-style-type: none"> <li>• German <b>6AV6 691-1CA01-3AA0</b></li> <li>• English <b>6AV6 691-1CA01-3AB0</b></li> <li>• French <b>6AV6 691-1CA01-3AC0</b></li> <li>• Italian <b>6AV6 691-1CA01-3AD0</b></li> <li>• Spanish <b>6AV6 691-1CA01-3AE0</b></li> </ul>
<b>Package MP 377 15" Touch</b> <ul style="list-style-type: none"> <li>• MP 377 15" Touch</li> <li>• Single license for MP 377 on USB flash drive<sup>1)</sup></li> <li>• Standard Multimedia Card (empty)</li> </ul>	E <b>6AV6 652-4GC01-2AA0</b>	<b>SIMATIC HMI Manual Collection B</b>
<b>Package MP 377 19" Touch</b> <ul style="list-style-type: none"> <li>• MP 377 19" Touch</li> <li>• Single license for MP 377 on USB flash drive<sup>1)</sup></li> <li>• Standard Multimedia Card (empty)</li> </ul>	E <b>6AV6 652-4HC01-2AA0</b>	Electronic documentation, on DVD  5 languages (English, French, German, Italian and Spanish); contains: all currently available user manuals, manuals and communication manuals for SIMATIC HMI
<b>Configuration</b> With SIMATIC WinCC flexible or SIMATIC WinCC	see HMI software	<b>Accessories</b> see HMI accessories
<b>Applications/options</b> <b>When configuring with WinCC (TIA Portal)</b> <ul style="list-style-type: none"> <li>• WinCC Sm@rtServer</li> <li>• WinCC Audit</li> <li>• WinCC MP 2008/software PLC</li> </ul>	see HMI software	

B: Subject to export regulations: AL: N and ECCN: EAR99S

E: Subject to export regulations: AL: 91999 and ECCN: 5D002ENCU

<sup>1)</sup> Can only be used for license handling

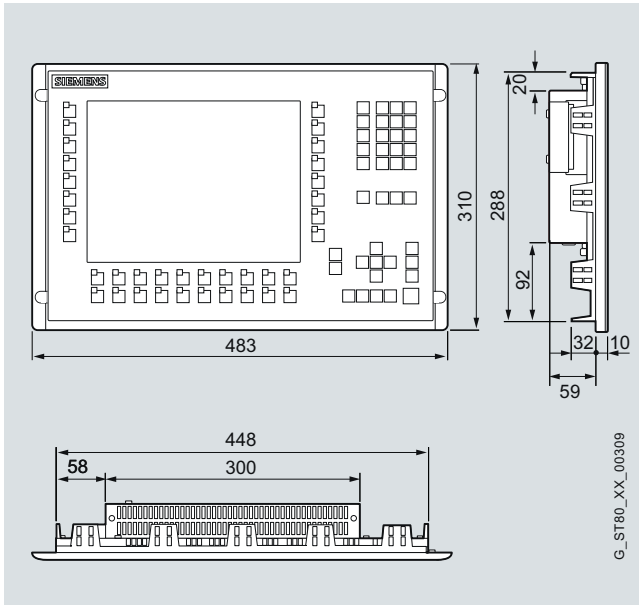
# Operator panels

## Multi Panels – 370 series

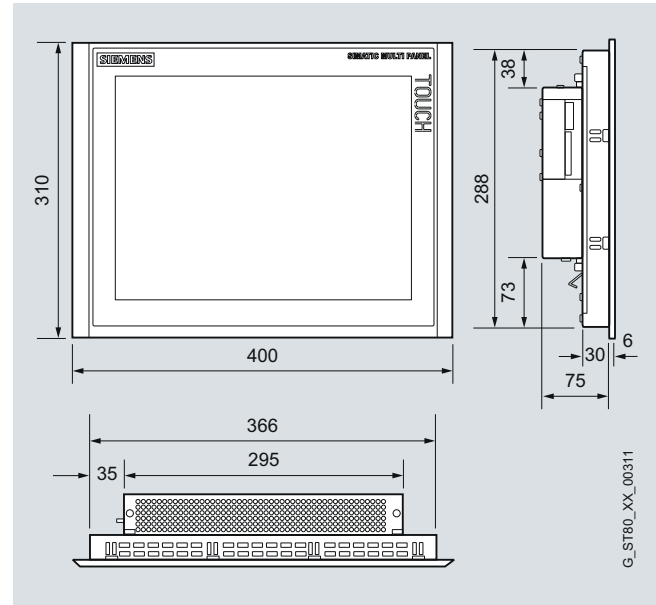
### SIMATIC MP 377

#### Dimensional drawings

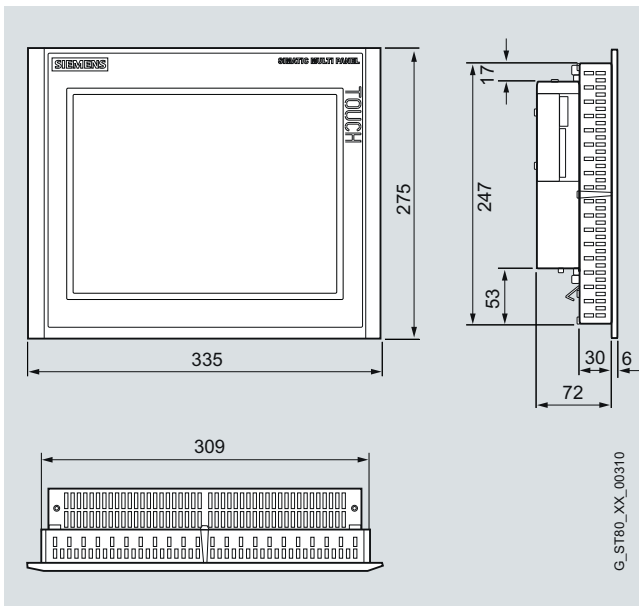
All dimensions in mm. Tolerance  $\pm 1$  mm. Panel cutout see technical specifications.



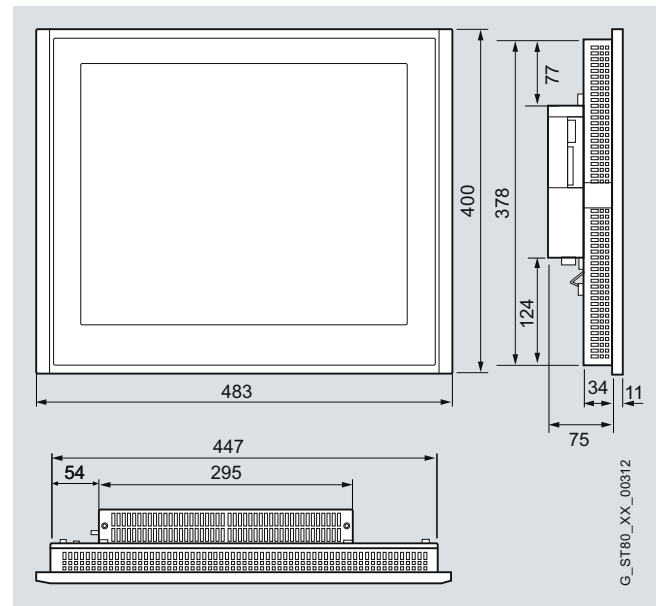
MP 377 12" Key



MP 377 15" Touch



MP 377 12" Touch



MP 377 19" Touch

#### More information

Additional information is available on the Internet at:

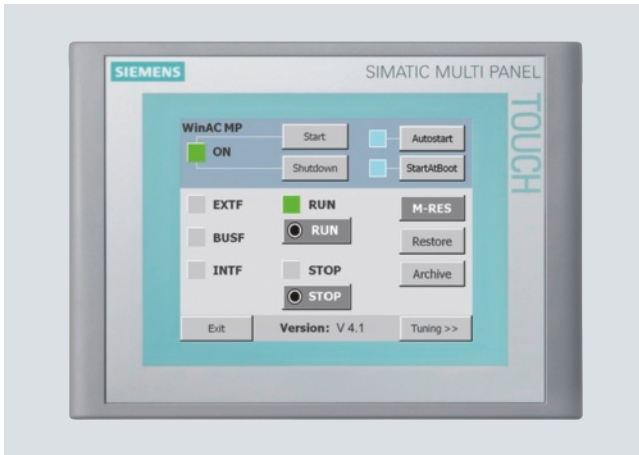
[www.siemens.com/simatic-multi-panels](http://www.siemens.com/simatic-multi-panels)

#### Note:

Do you require a specific modification or extension to the products described here? Under "Customized products", you can find information about additional and generally available products for the sector, and about the possibilities for customized modification and adaptation.



### Overview



- WinAC MP, the software PLC based on Windows CE
- An optimized version is available for all current MP platforms
- The economical solution for all applications in combination with a rugged hardware platform
- Ideal for tasks on the machine level, saves space and costs
- Best service concept, backup/restore of all data on a standard SD card, standard Multi Media Card or standard USB stick

### Application

The WinAC MP is a new, rugged software PLC for all SIMATIC HMI Multi Panel platforms. It has been developed for smaller and medium-sized applications that do not depend on the last millisecond and costs are in the forefront.

The WinAC uses familiar tools such as STEP 7 V5.4 SP4 or higher and WinCC flexible as of 2008 SP1 Standard or WinCC Comfort V11 or higher. This makes it possible to upgrade or switch without any extra training for new tools.

The I/Os are connected via PROFIBUS DP. Here, ET I/O modules up to technology modules are available.

### Design

#### Versions

Different WinAC MP versions are available. The versions define CPU performance classes.

- The versions are optimized for the Multi Panel platforms. These versions, namely WinAC MP 177 and 277 to 377, are based roughly on the hardware CPUs 314, 315 and 317. They have similar quantity frameworks but are not a 1:1 copy.
- All limit values, e.g. number of bit memories, DBs, FCs, I/Os, etc., are preset as with a hardware CPU and cannot be changed by the user. Detailed technical data is provided in the "Technical data" section.

# Operator panels

## Multi Panel options

### SIMATIC WinAC MP

#### Function

The principle of operation and the instruction set of the WinAC MP is basically identical to a hardware CPU. The settings for the WinAC MP-specific parameters are implemented by means of the Hardware Config. Since WinAC MP and HMI application share a processor, however, there is a special response regarding the timing of the WinAC MP. All PLC commands are more quickly processed multiple times faster than on a hardware CPU, but this is required to create time reserves for the HMI application. The potential for time optimization improves with larger PLC programs. In WinAC MP 2008, a fixed processing time must be set for HMI-RT, HMI options and communications. The default for this time is 50 ms. Users can change this time to achieve optimal performance of the application.

In practice, this means an OB1 executes faster on a soft CPU and the time gained can be used for HMI Runtime. Another advantage of the WinAC MP is that the HMI application can always be interrupted by WinAC MP time and process alarms.

Fast key response times can also be used with the implemented function "DP direct keys" with the WinAC MP. This provides another performance advantage of the WinAC MP.

#### Integration

##### I/Os

The I/O can be connected via PROFIBUS DP. Standard components such as ET200 and the modules that can be used within are utilized. Diverse technological components can also be used with the ET200M in this constellation. In addition to normal standard ET I/Os, the following FM modules are released on the PROFIBUS:

- FM 350-1 counter module
- FM 350-2 counter module (8-channel)
- FM 351 positioning module
- FM 352 cam controller
- FM 355-2 temperature control module
- FM 352-5 high-speed Boolean processor
- FM 353 positioning module for stepper motors
- FM 354 positioning module for servo motors
- FM 355 closed-loop control module

#### Programming

##### Programming

The programming in accordance with IEC 6 1131-3 and the configuration of WinAC MP are performed using STEP 7 V5.4 SP4 (or higher) and the SIMATIC engineering tools for production engineering. Thus, all SIMATIC programming languages for WinAC MP are available as well.

The SIMATIC programming languages comply with the standard EN 6.1131-3. This reduces the familiarization and training overhead. CFC, SCL, as well as S7-Graf <sup>1)</sup> and ProAgent <sup>1)</sup> are also supported.

In addition, program modules that have been programmed for SIMATIC S7 hardware CPUs can be reused in WinAC MP without modifications as long as they were not designed for special features of a SIMATIC S7 CPU.

<sup>1)</sup> Not with version WinAC MP 177.

## Technical specifications

Product type designation	6ES7 671-4EE00-0YA0 WinAC MP 177	6ES7 671-5EF01-0YA0 WinAC MP 277	6ES7 671-7EG01-0YA0 WinAC MP 377
<b>Memory</b>			
Work memory			
• integrated	128 Kibyte	256 Kibyte	512 Kibyte
• expandable	No	No	No
Load memory			
• integrated RAM, max.	8 Mbyte	8 Mbyte	8 Mbyte
<b>CPU-blocks</b>			
DB			
• Number, max.	512; FBs+FCs+DBs=512	1 024; FBs+FCs+DBs=1024	2 048; FBs+FCs+DBs=2048
• Size, max.	64 Kibyte	64 Kibyte	64 Kibyte
FB			
• Number, max.	512; FBs+FCs+DBs=512	1 024; FBs+FCs+DBs=1024	2 048; FBs+FCs+DBs=2048
• Size, max.	64 Kibyte	64 Kibyte	64 Kibyte
FC			
• Number, max.	512; FBs+FCs+DBs=512	1 024; FBs+FCs+DBs=1024	2 048; FBs+FCs+DBs=2048
• Size, max.	64 Kibyte	64 Kibyte	64 Kibyte
OB			
• Number, max.	18	18	18
• Size, max.	64 Kibyte	64 Kibyte	64 Kibyte
Nesting depth			
• per priority class	8	8	16
• additional within an error OB	2	2	2
<b>Counters, timers and their retentivity</b>			
S7 counter			
• Number	128	256	512
• of which retentive without battery			
- can be set	Yes	Yes	Yes
- lower limit	0	0	0
- upper limit	127	255	511
• Retentivity			
- can be set	Yes	Yes	Yes
- preset	8	8	8
• Counting range			
- lower limit	0	0	0
- upper limit	999	999	999
IEC counter			
• present	Yes; SFB0, SFB1, SFB2	Yes; SFB0, SFB1, SFB2	Yes; SFB0, SFB1, SFB2
S7 times			
• Number	128	256	512
• of which retentive without battery			
- can be set	Yes	Yes	Yes
- lower limit	0	0	0
- upper limit	127	255	511
• Retentivity			
- can be set	Yes	Yes	Yes
- preset	0	0	0
• Time range			
- lower limit	10 ms	10 ms	10 ms
- upper limit	9 990 s	9 990 s	9 990 s
IEC timer			
• present	Yes; SFB3, SFB4, SFB5	Yes; SFB3, SFB4, SFB5	Yes; SFB3, SFB4, SFB5
<b>Data areas and their retentivity</b>			
retentive data area in total (incl. times, counters, flags), max.	64 Kibyte	128 Kibyte	256 Kibyte
Flag			
• Number, max.	2 Kibyte	2 Kibyte	4 Kibyte
• Retentivity available	Yes	Yes	Yes

# Operator panels

## Multi Panel options

### SIMATIC WinAC MP

#### Technical specifications (continued)

Product type designation	6ES7 671-4EE00-0YA0 WinAC MP 177	6ES7 671-5EF01-0YA0 WinAC MP 277	6ES7 671-7EG01-0YA0 WinAC MP 377
Data blocks			
• Number, max.	512	1 024	2 048
• Size, max.	64 Kibyte	64 Kibyte	64 Kibyte
Local data			
• per priority class, max.	16 384 byte; for all priority classes	16 384 byte; for all priority classes	16 384 byte; for all priority classes
<b>Address area</b>			
I/O address area			
• Inputs	2 Kibyte	4 Kibyte	8 Kibyte
• Outputs	2 Kibyte	4 Kibyte	8 Kibyte
Process image			
• Inputs	1 Kibyte	2 Kibyte	2 Kibyte
• Outputs	1 Kibyte	2 Kibyte	2 Kibyte
• Inputs, adjustable	1 Kibyte	2 Kibyte	2 Kibyte
• Outputs, adjustable	1 Kibyte	2 Kibyte	2 Kibyte
• Inputs, default	512 byte	512 byte	512 byte
• Outputs, default	512 byte	512 byte	512 byte
• consistent data, max.	32 byte	32 byte	32 byte
<b>Hardware configuration</b>			
Number of DP masters			
• integrated	1	1	1
<b>Time of day</b>			
Runtime meter			
• Number	8	8	8
• Number/Number range	0 to 7	0 to 7	0 to 7
<b>1st interface</b>			
DP master			
• Number of connections, max.	4	8	8
• Services			
- PG/OP communication	Yes	Yes	Yes
- Routing	Yes	Yes	Yes
- Global data communication	No	No	No
- S7 basic communication	No	No	No
- S7 communication	Yes	Yes	Yes
- Equidistance mode support	No	No	No
- SYNC/FREEZE	Yes	Yes	Yes
- Activation/deactivation of DP slaves	Yes	Yes	Yes
- DPV1	Yes	Yes	Yes
• Transmission rate, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s
• Number of DP slaves, max.	32	32	32
• Address area			
- Inputs, max.	2 Kibyte	4 Kibyte	8 Kibyte
- Outputs, max.	2 Kibyte	4 Kibyte	8 Kibyte
<b>Communication functions</b>			
PG/OP communication	Yes	Yes	Yes
Routing	Yes	Yes	Yes
Global data communication			
• supported	No	No	No
S7 basic communication			
• supported	No	No	No
S7 communication			
• supported	Yes; PUT/GET, BSEND/BRCV, USEND/URCV	Yes; PUT/GET, BSEND/BRCV, USEND/URCV	Yes; PUT/GET, BSEND/BRCV, USEND/URCV
• as server	Yes	Yes	Yes
• as client	Yes	Yes	Yes
• User data per job, max.	480 byte	480 byte	480 byte

**Technical specifications** (continued)

Product type designation	6ES7 671-4EE00-0YA0 WinAC MP 177	6ES7 671-5EF01-0YA0 WinAC MP 277	6ES7 671-7EG01-0YA0 WinAC MP 377
Number of connections			
• overall	8; (max. 8 DP, rest PROFINET)	16; (max. 8 DP, rest PROFINET)	32; (max. 8 DP, rest PROFINET)
• usable for PG communication			
- reserved for PG communication	1	1	1
• usable for OP communication			
- reserved for OP communication	1	1	1
• usable for routing	6	14	30
• Number of logical connections (also in network), max.	8	16	32
<b>S7 message functions</b>			
Process diagnostic messages	Yes	Yes	Yes
<b>Test commissioning functions</b>			
Status/control			
• Status/control variable	Yes; Status blocks, single step, breakpoint	Yes; Status blocks, single step, breakpoint	Yes; Status blocks, single step, breakpoint
Forcing			
• Forcing	No	No	No
Diagnostic buffer			
• present	Yes	Yes	Yes
• Number of entries, max.	1 000; preset 120	1 000; preset 120	1 000; preset 120
- can be set	Yes	Yes	Yes
<b>Operating systems</b>			
Windows CE	Yes; Version 5.0 or higher	Yes; Version 5.0 or higher	Yes; Version 5.0 or higher
Configuration software			
• STEP 7	Yes; STEP7 V5.4 SP4 or higher	Yes; STEP7 V5.4 SP4 or higher	Yes; STEP7 V5.4 SP4 or higher
• WinCC flexible Compact	Yes; WinCC flexible 2008 SP1	No	No
• WinCC flexible Standard	Yes; WinCC flexible 2008 SP1	Yes; WinCC flexible 2008 SP1	Yes; WinCC flexible 2008 SP1
• WinCC flexible Advanced	Yes; WinCC flexible 2008 SP1	Yes; WinCC flexible 2008 SP1	Yes; WinCC flexible 2008 SP1
programming			
• Programming language			
- LAD	Yes	Yes	Yes
- FBD	Yes	Yes	Yes
- STL	Yes	Yes	Yes
- SCL	Yes	Yes	Yes
- CFC	Yes	Yes	Yes
• Software libraries			
- Process diagnostics	Yes; System error messages	Yes; System error messages, ProAgent (S7-Graph)	Yes; System error messages, ProAgent (S7-Graph)
Cycle time monitoring			
• can be set	Yes	Yes	Yes
• preset	6 000 ms	6 000 ms	6 000 ms
Online languages			
• Number	1; English	1; English	1; English

# Operator panels

## Multi Panel options

### SIMATIC WinAC MP

2

Ordering data	Order No.	Order No.
<b>WinAC MP, version WinAC MP 177 <sup>2)</sup></b> incl. a Single License for MP 177 on USB stick <sup>1)</sup> and electronic documentation	<b>6ES7 671-4EE00-0YA0</b>	<b>Package MP 277 10" Key</b> E <b>6AV6 652-3NC01-1AA0</b> • MP 277 10" Key • WinAC MP Version 277 • Electronic documentation • Single License for MP 277 on USB stick <sup>1)</sup> • Standard SD card 256 MB (empty)
<b>WinAC MP, version WinAC MP 277 <sup>2)</sup></b> incl. a Single License for MP 277 on USB stick <sup>1)</sup> and electronic documentation	<b>6ES7 671-5EF01-0YA0</b>	<b>Package MP 377 12" Touch</b> E <b>6AV6 652-4FC01-2AA0</b> • MP 377 12" Touch • WinAC MP Version 377 • Electronic documentation • Single License for MP 377 on USB stick <sup>1)</sup> • Standard SD card 256 MB (empty)
<b>WinAC MP, version WinAC MP 377 <sup>2)</sup></b> incl. a Single License for MP 377 on USB stick <sup>1)</sup> and electronic documentation	<b>6ES7 671-7EG01-0YA0</b>	<b>Package MP 377 12" Key</b> E <b>6AV6 652-4EC01-2AA0</b> • MP 377 12" Key • WinAC MP Version 377 • Electronic documentation • Single License for MP 377 on USB stick <sup>1)</sup> • Standard SD card 256 MB (empty)
<b>Complete pre-assembled packages</b> <b>Package MP 177 6" Touch</b> E <b>6AV6 652-2JC01-2AA0</b> • MP 177 6" Touch • WinAC MP Version 177 • Electronic documentation • Single License for MP 177 on USB flash drive <sup>1)</sup> • Standard SD card 256 MB (empty)		<b>Package MP 377 15" Touch</b> E <b>6AV6 652-4GC01-2AA0</b> • MP 377 15" Touch • WinAC MP Version 377 • Electronic documentation • Single License for MP 377 on USB stick <sup>1)</sup> • Standard SD card 256 MB (empty)
<b>Package MP 277 8" Touch</b> E <b>6AV6 652-3MC01-1AA0</b> • MP 277 8" Touch • WinAC MP Version 277 • Electronic documentation • Single License for MP 277 on USB stick <sup>1)</sup> • Standard SD card 256 MB (empty)		<b>Package MP 377 19" Touch</b> E <b>6AV6 652-4HC01-2AA0</b> • MP 377 19" Touch • WinAC MP Version 377 • Electronic documentation • Single License for MP 377 on USB stick <sup>1)</sup> • Standard SD card 256 MB (empty)
<b>Package MP 277 8" Key</b> E <b>6AV6 652-3LC01-1AA0</b> • MP 277 8" Key • WinAC MP Version 277 • Electronic documentation • Single License for MP 277 on USB stick <sup>1)</sup> • Standard SD card 256 MB (empty)		
<b>Package MP 277 10" Touch</b> E <b>6AV6 652-3PC01-1AA0</b> • MP 277 10" Touch • WinAC MP Version 277 • Electronic documentation • Single License for MP 277 on USB stick <sup>1)</sup> • Standard SD card 256 MB (empty)		

E: Subject to export regulations: AL: 91999 and ECCN: 5D002ENCU

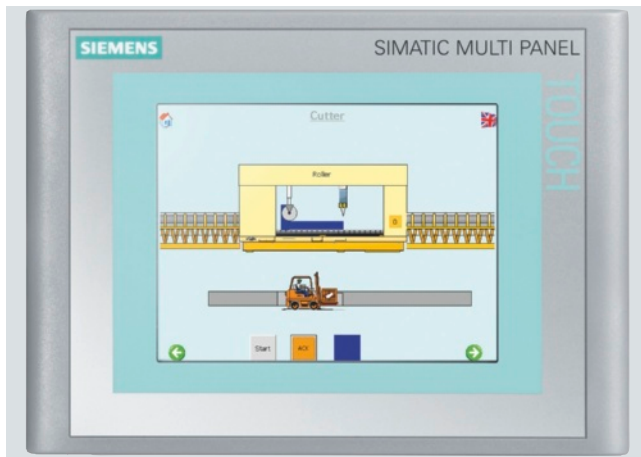
<sup>1)</sup> Can only be used for license handling<sup>2)</sup> UCL version on request

# Operator panels

## SIPLUS Multi Panels for 170 series

### SIPLUS HMI MP 177

#### Overview



- Multi Panels (MP) are deployed on-site – like Operator Panels – for machine operation and monitoring
- The buffer content and the retentive WinAC MP data remain even when the panels are off and no battery is present
- PLC functionality can be directly integrated into the MP 177 platform using option
- Multi Panels can be fully expanded through the Sm@rtService and Sm@rtAccess options
- Full graphics 5.7" TFT display, color (64k colors)
- All interfaces onboard such as MPI, PROFIBUS DP, USB, PROFINET (Ethernet TCP/IP)

The MP 177 6" Touch is also delivered with a WinAC MP 177 as a package. WinCC flexible 2008 SP1 Compact, Standard, or Advanced is required for the configuration of the MP 177.

#### Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

SIPLUS HMI MP 177	
Order No.	<b>6AG1 642-0BD01-4AX0</b>
Order No. based on	<b>6AV6 642-0EA01-3AX0</b>
Ambient temperature range	0 ... + 50 °C
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical data	The technical data of the standard product applies except for the ambient conditions.
<b>Ambient conditions</b>	
Relative humidity	5 ... 100 % Condensation permissible
Biologically active substances	Conformity with EN 60721-3-3, Class 3B2 mold and fungal spores (except fauna)
Chemically active substances	Conformity with EN 60721-3-3, Class 3C4 incl. salt mist and ISA-S71.04 severity level G1; G2; G3; GX <sup>1) 2)</sup>
Mechanically active substances	Conformity with EN 60721-3-3, Class 3S4 including conductive sand, dust <sup>2)</sup>
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1000 ... +2000 m) see ambient temperature range 795 ... 658 hPa (+2000 ... +3500 m) derating 10 K 658 ... 540 hPa (+3500 ... +5000 m) derating 20 K

- 1) ISA-S71.04 severity level GX: Long-term load: SO<sub>2</sub> < 4.8 ppm; H<sub>2</sub>S < 9.9 ppm; Cl < 0.2 ppm; HCl < 0.66 ppm; HF < 0.12 ppm; NH < 49 ppm; O<sub>3</sub> < 0.1 ppm; NOX < 5.2 ppm  
Limit value (max. 30 min/d): SO<sub>2</sub> < 17.8 ppm; H<sub>2</sub>S < 49.7 ppm; Cl < 1.0 ppm; HCl < 3.3 ppm; HF < 2.4 ppm; NH < 247 ppm; O<sub>3</sub> < 1.0 ppm; NOX < 10.4 ppm

- 2) The supplied plug covers must remain in place over the unused interface when operated in atmospheres containing corrosive gases!

The technical documentation on SIPLUS can be found here:

[www.siemens.com/siplus-extreme](http://www.siemens.com/siplus-extreme)

Ordering data	Order No.
<b>SIPLUS HMI MP 177 6" Touch</b> E	<b>6AG1 642-0EA01-4AX0</b>
(medial exposure)	
min. WinCC flexible 2008 required	
<b>Accessories</b>	see SIMATIC HMI MP 177

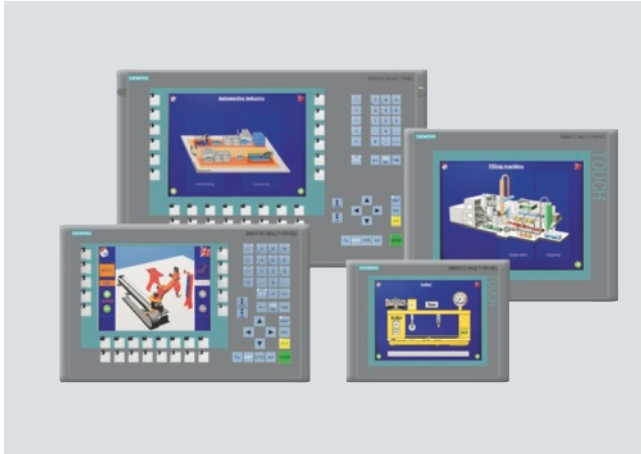
E: Subject to export regulations: AL: 91999 and ECCN: 5D002ENCU

# Operator panels

## SIPLUS Multi Panels for 270 series

### SIPLUS HMI MP 277

#### Overview



- Multi Panels (MP) are deployed on-site – like Operator Panels – for machine operation and monitoring
- The buffer content remains even when the panels are off and no battery is present
- PLC functionality can be directly integrated into the MP 277 platform using option
- They can extend their functionality through the installation of additional Windows CE applications (multi-panel and panel options)
- The SIMATIC MP 277 combine on the basis of Windows CE the ruggedness of operator panels with the flexibility of PCs
- Full graphics 7.5" or 10.4" TFT display, color (64k colors)
- **MP 277 8" and MP 277 10" Touch:**  
Touchscreen (analog/resistive)  
**MP 277 8" Key:**  
38 system keys, 26 freely-configurable and freely-inscribable function keys (18 with LED)  
**MP 277 10" Key:**  
38 system keys, 36 freely-configurable and freely-inscribable function keys (28 with LEDs)
- The MP 277 is also available with a stainless steel front, and thus meets the higher requirements of e.g. the food and beverage industry.
- All interfaces onboard such as MPI, PROFIBUS DP, USB, PROFINET (Ethernet TCP/IP)

#### Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

SIPLUS HMI MP 277	
Order No.	<b>6AG1 643-0CD01-4AX1</b>
Order No. based on	<b>6AV6 643-0CD01-1AX1</b>
Ambient temperature range	0 ... + 50 °C
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical data	The technical data of the standard product applies except for the ambient conditions.
<b>Ambient conditions</b>	
Relative humidity	5 ... 100 % Condensation permissible
Biologically active substances	Conformity with EN 60721-3-3, Class 3B2 mold and fungal spores (except fauna)
Chemically active substances	Conformity with EN 60721-3-3, Class 3C4 incl. salt mist and ISA-S71.04 severity level G1; G2; G3; GX <sup>1) 2)</sup>
Mechanically active substances	Conformity with EN 60721-3-3, Class 3S4 including conductive sand, dust <sup>2)</sup>
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1000 ... +2000 m) see ambient temperature range 795 ... 658 hPa (+2000 ... +3500 m) derating 10 K 658 ... 540 hPa (+3500 ... +5000 m) derating 20 K

- 1) ISA-S71.04 severity level GX: Long-term load: SO<sub>2</sub> < 4.8 ppm; H<sub>2</sub>S < 9.9 ppm; Cl < 0.2 ppm; HCl < 0.66 ppm; HF < 0.12 ppm; NH < 49 ppm; O<sub>3</sub> < 0.1 ppm; NOX < 5.2 ppm  
Limit value (max. 30 min/d): SO<sub>2</sub> < 17.8 ppm; H<sub>2</sub>S < 49.7 ppm; Cl < 1.0 ppm; HCl < 3.3 ppm; HF < 2.4 ppm; NH < 247 ppm; O<sub>3</sub> < 1.0 ppm; NOX < 10.4 ppm

- 2) The supplied plug covers must remain in place over the unused interface when operated in atmospheres containing corrosive gases!

The technical documentation on SIPLUS can be found here:

[www.siemens.com/siplus-extreme](http://www.siemens.com/siplus-extreme)

Ordering data	Order No.
<b>SIPLUS HMI MP 277</b> (medial exposure) Multi Panel (including mounting accessories) with • 10" color TFT display, Touch	<b>E 6AG1 643-0CD01-4AX1</b>
<b>Accessories</b>	see SIMATIC HMI MP 277

E: Subject to export regulations: AL: 91999 and ECCN: 5D002ENCU



# Operator panels

## SIPLUS Multi Panels for 370 series

SIPLUS HMI MP 377

### Overview



- Multi Panels (MP) are deployed on-site – like Operator Panels – for machine operation and monitoring
- They can extend their functionality through the installation of additional Windows CE applications (multi-panel and panel options)
- The SIMATIC MP 377 combine on the basis of Windows CE the ruggedness of operator panels with the flexibility of PCs
- PLC functionality can be directly integrated into the MP 377 platform using option

- Full graphics 12.1" or 15" or 19" TFT display, color (64k colors)
- MP 377 12" Touch, MP 377 15" Touch and MP 377 19" Touch: Touchscreen (analog/resistive)  
MP 377 12" Keys:  
38 system keys, 36 freely-configurable and freely-inscribable function keys (36 with LEDs)
- SIMATIC MP 377 PRO 15" Touch:  
Featuring a robust and very compact aluminum housing, it is completely IP65 protected and therefore suitable for harsh ambient conditions.
- All interfaces onboard such as MPI, PROFIBUS DP, USB, PROFINET (Ethernet TCP/IP)
- SIMATIC MP 377 INOX 15" Touch (stainless steel front):  
The MP 377 15" Touch is also available with a stainless steel front (EN 1672-2) and as a fully enclosed HMI (IP65). The versions extend the range of the Multi Panels 377 for special applications, ambient conditions, and for specific industries (e.g. food, beverages, and tobacco industry).

#### Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

SIPLUS HMI MP 377	12" Color-TFT-Display, Touch	15" Color-TFT-Display, Touch
<b>Order No.</b>	<b>6AG1 644-0AA01-4AX0</b>	<b>6AG1 644-0AB01-4AX0</b>
<b>Order No. based on</b>	<b>6AV6 644-0AA01-2AX0</b>	<b>6AV6 644-0AB01-2AX0</b>
Ambient temperature range	0 ... + 50 °C	
Conformal coating	Coating of the printed circuit boards and the electronic components	
Technical data	The technical data of the standard product applies except for the ambient conditions.	
<b>Ambient conditions</b>		
Relative humidity	5 ... 100 % Condensation permissible	
Biologically active substances	Conformity with EN 60721-3-3, Class 3B2 mold and fungal spores (except fauna)	
Chemically active substances	Conformity with EN 60721-3-3, Class 3C4 incl. salt mist and ISA-S71.04 severity level G1; G2; G3; GX <sup>1) 2)</sup>	
Mechanically active substances	Conformity with EN 60721-3-3, Class 3S4 including conductive sand, dust <sup>2)</sup>	
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1000 ... +2000 m) see ambient temperature range 795 ... 658 hPa (+2000 ... +3500 m) derating 10 K 658 ... 540 hPa (+3500 ... +5000 m) derating 20 K	

<sup>1)</sup> ISA-S71.04 severity level GX: Long-term load: SO<sub>2</sub> < 4.8 ppm; H<sub>2</sub>S < 9.9 ppm; Cl < 0.2 ppm; HCl < 0.66 ppm; HF < 0.12 ppm; NH < 49 ppm; O<sub>3</sub> < 0.1 ppm; NOX < 5.2 ppm  
Limit value (max. 30 min/d): SO<sub>2</sub> < 17.8 ppm; H<sub>2</sub>S < 49.7 ppm; Cl < 1.0 ppm; HCl < 3.3 ppm; HF < 2.4 ppm; NH < 247 ppm; O<sub>3</sub> < 1.0 ppm; NOX < 10.4 ppm

<sup>2)</sup> The supplied plug covers must remain in place over the unused interface when operated in atmospheres containing corrosive gases!

The technical documentation on SIPLUS can be found here:

[www.siemens.com/siplus-extreme](http://www.siemens.com/siplus-extreme)

### Ordering data

#### SIPLUS HMI MP 377

(medial exposure)

Multi Panel (including mounting accessories) with

- 12" color TFT display, Touch E **6AG1 644-0AA01-4AX0**
- 15" color TFT display, Touch E **6AG1 644-0AB01-4AX0**

E: Subject to export regulations: AL: 91999 and ECCN: 5D002ENCU

### Order No.

#### Accessories

### Order No.

see SIMATIC HMI MP 377

# Operator panels

## System interfaces with WinCC flexible

### System interfaces with WinCC flexible

#### Overview

SIMATIC Basic Panel, Touch Panels (TP), Operator Panels (OP), Mobile Panel, Multifunctional Platforms (MP)<sup>1)</sup> and the SIMATIC HMI software package for PC WinCC flexible Runtime support HMI functionality in conjunction with:

- SIMATIC S7
- SIMATIC S5
- SIMATIC 505
- SIMOTION
- SINUMERIK<sup>2)</sup>
- Non-Siemens controllers:
  - Allen Bradley - DF1, DH485 and Ethernet IP protocols
  - GE Fanuc - SNP/SNPX protocol
  - LG GLOFA GM - dedicated protocol
  - Mitsubishi - FX and MP 4 protocols
  - Modicon - Modbus RTU and TCP/IP protocols
  - Omron I - Link/MultiLink protocol
  - Telemecanique - UNI-TELWAY protocol

For more detailed information, refer to the WinCC flexible user manual, the "Windows-based systems communication" manual, and the WinCC flexible online help.

- 1) For the sake of simplicity, SIMATIC TP/OP/MP is always used in the text below. This is not restrictive, as the information is valid for all systems referred to above. If there are constraints, direct reference is made to them in the text.
- 2) Required under WinCC flexible: "SINUMERIK HMI copy license WinCC flexible CE" and "SINUMERIK HMI copy license OA". For configuring, a "SINUMERIK HMI engineering package WinCC flexible" is also necessary.

#### Note:

Interface options for HMI devices: See the individual device descriptions.

Communication standard	SIMATIC HMI				
Version	TP 177B DP/PN OP 177B DP/PN Mobile Panel 177 PN MP 177	TP 277 OP 277	Mobile Panel 277 <sup>6)</sup> Mobile Panel 277 IWLAN MP 277 MP 377	WinCC flexible Runtime	Connection via

#### OPC Data Access V2.05a + OPC Data Access XML V1.00

OPC client (COM/DCOM)	–	–	–	•	Industrial Ethernet (see Catalog IK PI)
OPC server (COM/DCOM)	–	–	–	• <sup>1)</sup>	Industrial Ethernet (see Catalog IK PI)
OPC XML client (SOAP/XML)	–	–	–	• <sup>2)</sup>	Industrial Ethernet (see Catalog IK PI)
OPC XML server (SOAP/XML)	–	–	• <sup>3)</sup>	–	Industrial Ethernet (see Catalog IK PI)

#### HTTP communication for variable exchange between SIMATIC HMI systems

HTTP client	• <sup>4)</sup>	• <sup>4)</sup>	• <sup>4)</sup>	• <sup>5)</sup>	Industrial Ethernet (see Catalog IK PI)
HTTP server	• <sup>4)</sup>	• <sup>4)</sup>	• <sup>4)</sup>	• <sup>5)</sup>	Industrial Ethernet (see Catalog IK PI)

- System interface possible
- System interface not possible

- 1) Option WinCC flexible /OPC Server for WinCC flexible Runtime required
- 2) Only with DCOM/XML gateway included in the scope of delivery of WinCC flexible for access to MP 277, MP 377 and MP 370 OPC XML servers
- 3) Option WinCC flexible /OPC Server for SIMATIC Multi Panel required

#### Extended functionality with WinCC flexible

WinCC flexible supports OPC communication for Multi Panel and WinCC flexible Runtime and HTTP communication for all panels with integrated Ethernet interface. Both OPC and HTTP communication can be used in parallel with the process links to SIMATIC S7/S5/505 or non-Siemens PLCs.

#### OPC Data Access (MP 277, MP 377, WinCC flexible Runtime only)

OPC Data Access is an open standard for exchanging both local and remote variables between various applications via Industrial Ethernet. The original version of OPC is based on Microsoft COM/DCOM and, therefore, requires a Microsoft Windows-based PC operating system (not Windows CE) on both clients and servers. As OPC XML, communication is based on the Internet standard SOAP/XML and is, therefore, suitable for embedded systems with Windows CE.

Options that are required: WinCC flexible/ OPC server

#### HTTP communication for the variable exchange between SIMATIC HMI systems

(only TP 177B DP/PN, OP 177B DP/PN, Mobile Panel 177 PN, TP 277, OP 277, Mobile Panel 277, Mobile Panel 277 IWLAN, MP 277, MP 377, WinCC flexible Runtime)

Communication based on HTTP message frames enables variables to be exchanged between SIMATIC HMI systems.

Options that are required:

WinCC flexible/ Sm@rt Access

- 4) Option WinCC flexible /Sm@rtAccess for SIMATIC Panel required
- 5) Option WinCC flexible /Sm@rtAccess for WinCC flexible Runtime required

- 6) Depending on the terminal box used

### Overview

The following types of interface are supported in respect of the link between SIMATIC HMI Panels and SIMATIC WinCC flexible Runtime with SIMATIC S7:

- **PPI interface:**  
Interface between SIMATIC HMI Panels and SIMATIC S7-200 via PPI. Communication runs on the PPI protocol, a standard FB as with SIMATIC S5 is not required.
- **MPI interface:**  
Interface between SIMATIC HMI Panels and SIMATIC S7 via the integrated PPI interface with S7-200 or MPI interface with S7-300/-400 or alternatively via the MPI interface of a separate interface module and the backplane bus to the SIMATIC S7-CPU. Communication runs on the MPI protocol (PG/OP communication), a standard FB as with SIMATIC S5 is not required.
- **PROFIBUS interface:**  
Interface between SIMATIC HMI Panels and SIMATIC S7 via the integrated PROFIBUS interface on the CPU or alternatively via the PROFIBUS interface on a separate interface module and the backplane bus to the SIMATIC S7-CPU. Communication runs on the MPI protocol (PG/OP communication), a standard FB as with SIMATIC S5 is not required.
- **PROFINET interface:**  
Interface between SIMATIC HMI Panels and SIMATIC S7 via the integrated PROFINET interface on the CPU or alternatively via the Industrial Ethernet interface on a separate interface module and the backplane bus to the SIMATIC S7-CPU. Communication runs on the MPI protocol (PG/OP communication), a standard FB as with SIMATIC S5 is not required.

The maximum possible number of S7 connections of a CPU is determined by its power (see Catalog ST 70); from the point of view of SIMATIC HMI Panels the following restrictions apply:

- OP 73micro, TP 177micro: 1 connection
- OP 73: max. 2 connections
- OP 77A, TP 177A, Basic Panel, OP 77B, TP 177B, OP 177B, Mobile Panel 177: max. 4 connections
- TP 277, OP 277; Mobile Panel 277, MP 177, MP 277, MP 377: max. 6 connections
- PC with WinCC flexible Runtime: max. 8 connections

### PPI interface

From the point of view of the concept, the PPI interface is a point-to-point connection between a SIMATIC HMI Panel (PPI master) or alternatively a PG (PPI master), and a S7-200 (PPI slave).

### MPI interface/PROFIBUS interface/Industrial Ethernet interface

The multipoint-enabled communication interfaces of SIMATIC HMI Panels and SIMATIC S7 are used. Options are:

- Interface between one or a number of SIMATIC HMI Panels (MPI master) and one or a number of S7-1200/300/400s or WinAC (MPI master).  
(possible network topology: **MPI/PROFIBUS/Industrial Ethernet**)
- Interface between one or a number of SIMATIC HMI Panels (MPI master) and one or a number of S7-200s (MPI slave) <sup>1)</sup>  
(possible network topology: **PPI/MPI/PROFIBUS**)

Unlike PPI connections, MPI connections are static connections that are set up during booting and then monitored.

The original format of a master/master link has in the meantime been joined by a master/slave link, which has enabled integration of the S7-200 (except CPU 212). <sup>1)</sup>

In principle, this type of information exchange between SIMATIC HMI Panel and SIMATIC S7 is independent of the network used, PPI, MPI, PROFIBUS or Industrial Ethernet: SIMATIC HMI Panels are S7 clients and SIMATIC S7 CPUs are S7 servers.

<sup>1)</sup> Constraints with regard to baud rate for S7-200; see Catalog ST 70.

# Operator panels

## System interfaces with WinCC flexible

### SIMATIC S7

#### Overview (continued)

Controller	SIMATIC HMI				Connection via
Target hardware (PROTOCOL) (physics)	TD 100C TD 200 TD 200C TD 400C	OP 73 micro TP 177micro	OP 73	OP 77A TP 177A	
<b>SIMATIC S7 (PPI/MPI)</b>					
via <i>PPI</i> on <b>S7-200 (PPI)</b>	• <sup>1)</sup>	–	–	–	<b>MPI cable</b> <sup>5)</sup>
via <i>MPI</i> or <i>PROFIBUS</i> ( <b>PG/OP communication</b> ) with <b>S7-200</b>	–	• <sup>2)</sup>	• <sup>3)</sup>	• <sup>4)</sup>	<b>MPI cable</b> <sup>5)</sup>
via <i>MPI</i> or <i>PROFIBUS</i> ( <b>PG/OP communication</b> ) with <b>S7-300, -400</b>	–	–	• <sup>3)</sup>	• <sup>4)</sup>	<b>MPI cable</b> <sup>5)</sup>
via <i>PPI</i> network ( <b>PPI</b> ) with max. 1 x <b>S7-200</b>	• <sup>1)</sup>	–	–	–	<b>PPI network</b> <sup>6)</sup> (see Catalogs ST 70 and IK PI)
via <i>PPI</i> network ( <b>PG/OP communication</b> ) with max. 4 x <b>S7-200</b>	• <sup>1)</sup>	• <sup>2)</sup>	• <sup>3)</sup>	• <sup>4)</sup>	<b>PPI network</b> <sup>6)</sup> (see Catalogs ST 70 and IK PI)
via <i>MPI</i> or <i>PROFIBUS</i> network ( <b>PG/OP communication</b> ) with max. 4 x <b>S7-200</b>	–	• <sup>2)</sup>	• <sup>3)</sup>	• <sup>4)</sup>	<b>MPI or PROFIBUS network</b> <sup>6)</sup> (see Catalogs ST 70 and IK PI)
via <i>MPI</i> or <i>PROFIBUS</i> network ( <b>PG/OP communication</b> ) with max. 4 x <b>S7-300, -400, WinAC</b>	–	–	• <sup>3)</sup>	• <sup>4)</sup>	<b>MPI or PROFIBUS network</b> <sup>6)</sup> (see Catalogs ST 70 and IK PI)
via <i>Industrial Ethernet (TCP/IP)</i> ( <b>PG/OP communication</b> ) with max. 4 x <b>S7-200, -300, -400, WinAC</b>	–	–	–	–	<b>Industrial Ethernet</b> (see Catalog IK PI)

- System interface possible
- System interface not possible

- <sup>1)</sup> TD series can only be interfaced with max. 1 x S7-200 via PPI (PPI/MPI); network operation (parallel PG, etc.) possible; max. data transfer rate 187.5 kbit/s; cable included in scope of supply
- <sup>2)</sup> OP 73micro, TP 177 micro can only be interfaced with max. 1 x S7-200 (MPI); network operation (parallel PG, etc.) possible; max. data transfer rate 187.5 kbit/s
- <sup>3)</sup> OP 73 can only be interfaced with max. 2 x SIMATIC S7 (MPI); network operation (parallel PG, etc.) possible; max. data transfer rate 1.5 Mbit/s
- <sup>4)</sup> Max. transmission rate 1.5 Mbit/s
- <sup>5)</sup> MPI cable 6ES7 901-0BF00-0AA0 (max. 187.5 Kbit/s) included in PG scope of delivery
- <sup>6)</sup> Bus connector 6GK1 500-0EA02

## Overview (continued)

Controller	SIMATIC HMI				
Target hardware (PROTOCOL) (physics)	Basic Panels	OP 77B TP 177B DP OP 177B DP TP 177B DP/PN OP 177B DP/PN Mobile Panel 177 DP Mobile Panel 177 PN	TP 277 OP 277 Mobile Panel 277 Mobile Panel 277 IWLAN MP 177 MP 277 MP 377	WinCC flexible Runtime	Connection via
via <i>PPI</i> on <b>S7-200 (PPI)</b>	–	• 1) 2)	• 1) 2)	• 1) 3)	<b>MPI cable</b> <sup>11)</sup>
via <i>MPI</i> or <i>PROFIBUS</i> ( <b>PG/OP communication</b> ) on <b>S7-200</b>	• 2)	• 2) 5)	• 2) 5)	• 3) 5)	<b>MPI cable</b> <sup>11)</sup>
via <i>MPI</i> or <i>PROFIBUS</i> ( <b>PG/OP communication</b> ) with <b>S7-300, -400</b>	• 2)	• 2)	• 2)	• 3)	<b>MPI cable</b> <sup>11)</sup>
via <i>PPI</i> network ( <b>PPI</b> ) with max. 1 x <b>S7-200</b>	–	• 1) 2)	• 1) 2)	• 1) 3)	<b>PPI network</b> <sup>12)</sup> (see Catalog ST 70 and IK PI)
via <i>PPI</i> network ( <b>PG/OP communication</b> ) with max. 4 x <b>S7-200</b>	• 2)	• 6)	–	–	<b>PPI network</b> <sup>12)</sup> (see Catalog ST 70 and IK PI)
via <i>MPI</i> or <i>PROFIBUS</i> network ( <b>PG/OP communication</b> ) with max. 4 x <b>S7-200</b>	• 2)	• 2) 5)	• 2) 5)	• 3) 5)	<b>MPI or PROFIBUS network</b> <sup>12)</sup> (see Catalogs ST 70 and IK PI)
via <i>MPI</i> or <i>PROFIBUS</i> network ( <b>PG/OP communication</b> ) with max. 4 x <b>S7-300, -400, WinAC</b>	• 2)	• 2)	• 2)	• 3)	<b>MPI or PROFIBUS network</b> <sup>12)</sup> (see Catalogs ST 70 and IK PI)
via <i>Industrial Ethernet (TCP/IP)</i> ( <b>PG/OP communication</b> ) with max. 4 x <b>S7-200, -300, -400, WinAC</b>	– <sup>7)</sup>	• 7) 8)	• 8) 9)	• 10)	<b>Industrial Ethernet</b> (see Catalog IK PI)

- System interface possible
- System interface not possible

- 1) Can only be interfaced with max. 1 x S7-200 via PPI (PPI); network operation (parallel PG, etc.) possible
- 2) Not Basic Panel PN, Mobile Panel 177 PN, Mobile Panel 277 IWLAN; Mobile Panel 177 DP, Mobile Panel 277 connection via special connecting cable and terminal box (see Mobile Panel); Please refer to the manual for cable assignment
- 3) Connection via integrated MPI/PROFIBUS interface; use of CP 5611 A2 with a standard PC.
- 4) Max. transmission rate 1.5 Mbit/s
- 5) Only on passive S7-200; OP 77B (MPI) also on active S7-200
- 6) Only OP 77B (MPI)
- 7) Only Basic Panel PN, TP 177B DP/PN, OP 177B DP/PN, Mobile Panel 177 PN
- 8) Mobile Panel 177 PN, Mobile Panel 277 connection via special connecting cable and terminal box (see Mobile Panel); Please refer to the manual for cable assignment
- 9) Mobile Panel 277 IWLAN (wireless interface, see Mobile Panel)
- 10) Connection via integrated Industrial Ethernet interface; use the CP 1612 with a standard PC
- 11) MPI cable 6ES7 901-0BF00-0AA0 (max. 187.5 Kbit/s) included in PG scope of delivery (for download and test purposes only)
- 12) Bus connector 6GK1 500-0EA02

# Operator panels

## System interfaces with WinCC flexible

### SIMATIC S5

#### Overview

A variety of interfaces differing in respect of type and performance are available for linking SIMATIC HMI Panels to SIMATIC S5 (not S5-150U). However, a feature common to all is that from the point of view of the connected SIMATIC HMI Panel, the connection is always a logical point-to-point one, i.e. there is always a fixed assignment between a SIMATIC HMI Panel and a PLC.

#### **AS511 interface (not for OP 77A, TP 177A, Basic Panel, Mobile Panel 177, Mobile Panel 277)**

S5-90U to -135U, -155U (except CPU 922 < Version 9, except CPU 928 [6ES5 928-3UA11], except CPU 946/947 [6ES5 94•-3UA11], except CPU 946/947 [6ES5 94•-3UA21], except CPU 946/947 [6ES5 94•-3UA22] < Version 5)

The AS511 interface is implemented via the PG interface of SIMATIC S5 and uses the associated CPU resources, that is, the performance capability of the SIMATIC HMI Panel is determined by the performance capability of the SIMATIC CPU used.

#### **PROFIBUS DP interface (not for OP 77A, TP 177A, Basic Panel, Mobile Panel 177 PN, Mobile Panel 277 IWLAN)**

S5-115U, -135U, -155U via IM 308C or CP 5431 FMS/ DP (except CPU 922 < Version 9, except CPU 928 [6ES5 928-3UA11], except CPU 946/947 [6ES5 94•-3UA11], except CPU 946/947 [6ES5 94•-3UA21], except CPU 946/947 [6ES5 94•-3UA22] < Version 5)

The PROFIBUS DP interface supports the connection of:

- Up to 2 SIMATIC HMI Panels as SLAVES via a PROFIBUS network to a SIMATIC S5-95U with integrated PROFIBUS DP/master interface [6ES5 095-8ME01]
- Up to 30 SIMATIC HMI Panels as SLAVES via a PROFIBUS network to a SIMATIC S5 with separate PROFIBUS DP/master interface IM 308C, or CP 5431 FMS/DP

Communication between SIMATIC HMI Panels (DP slaves) and SIMATIC S5 (DP master) runs via PROFIBUS DP message frames in accordance with EN 50170 with higher-level "HMI profile". A function block which must be called for each connected SIMATIC HMI Panel is required in the PLC (FB is included in scope of delivery).

## Overview (continued)

Controller	SIMATIC HMI				
Target hardware (PROTOCOL) (physics)	OP 77A TP 177A Basic Panels	OP 77B TP 177B DP OP 177B DP TP 177B DP/PN OP 177B DP/PN Mobile Panel 177 DP Mobile Panel 177 PN	TP 277 OP 277 Mobile Panel 277 Mobile Panel 277 IWLAN MP 177 MP 277 MP 377	WinCC flexible Runtime	Connection via

## SIMATIC S5 (AS511)

<b>S5-90U to 155U</b> except CPU 922 < version 9, except CPU 928 (6ES5 928-3UA11) except CPU 946/947 (6ES5 94.-3UA11, 6ES5 94.-3UA21, 6ES5 94.-3UA22 < version 5) (TTY)	—	• <sup>2)</sup>	—	•	<b>6ES5 734-1BD20</b> <sup>1)</sup> (3.2 m) <b>6XV1 440-2A...</b> (see HMI accessories/connecting cables)
<b>S5-90U to 155U</b> except CPU 922 < version 9, except CPU 928 (6ES5 928-3UA11) except CPU 946/947 (6ES5 94.-3UA11, 6ES5 94.-3UA21, 6ES5 94.-3UA22 < version 5) (TTY)	—	• <sup>3)</sup>	• <sup>3)</sup>	—	<b>6AV6 671-8XJ00-0AX0</b> (RS422-TTY adapter) <b>6XV1 440-2A...</b> (see HMI accessories/connecting cables)

## SIMATIC S5 (PROFIBUS DP + HMI)

via <i>PROFIBUS DP</i> with 1 x <b>S5-95U/L2-DP/master</b> (6ES5 095-8ME02)	—	• <sup>3)</sup>	• <sup>3)</sup>	• <sup>4)</sup>	<b>PROFIBUS</b> <sup>4)</sup> (see Catalog IK PI)
via <i>PROFIBUS DP</i> with <i>IM 308C</i> on <b>S5-115U, -135U, -155U</b> except CPU 922 < version 9, except CPU 928 (6ES5 928-3UA11), except CPU 946/947 (6ES5 94.-3UA11, 6ES5 94.-3UA21, 6ES5 94.-3UA22 < version 5)	—	• <sup>3)</sup>	• <sup>3)</sup>	• <sup>4)</sup>	<b>PROFIBUS</b> <sup>4)</sup> (see Catalog IK PI)
via <i>PROFIBUS DP</i> with <i>CP 5431 FMS/DP</i> on <b>S5-115U, -135U, -155U</b> except CPU 922 < version 9, except CPU 928 (6ES5 928-3UA11), except CPU 946/947 (6ES5 94.-3UA11, 6ES5 94.-3UA21, 6ES5 94.-3UA22 < version 5)	—	• <sup>3)</sup>	• <sup>3)</sup>	• <sup>4)</sup>	<b>PROFIBUS</b> <sup>4)</sup> (see Catalog IK PI)

- System interface possible
- System interface not possible

<sup>1)</sup> PC cable with integrated level converter RS 232/TTY

<sup>2)</sup> only OP 77B

<sup>3)</sup> WinCC flexible 2008 Service Pack 2 and higher



# Operator panels

## System interfaces with WinCC flexible

### SIMATIC 505

#### Overview

A variety of interfaces differing in respect of type and performance are available for linking SIMATIC HMI Panels to SIMATIC 505. However, a feature common to all is that from the point of view of the connected SIMATIC HMI Panel, the connection is always a logical point-to-point one, that is, there is always a fixed assignment between an HMI Panel and a PLC.

#### **NITP interface (not for OP 77A, TP 177A, Basic Panel, Mobile Panel 177 PN, Mobile Panel 277 IWLAN)**

The NITP interface runs via the PG interface of the SIMATIC 505 and uses the associated CPU resources, that is, the performance capability of the SIMATIC HMI Panel is determined by the performance capability of the SIMATIC CPU used.

#### **PROFIBUS DP interface (not for OP 77A, TP 177A, Basic Panel, Mobile Panel 177 PN, Mobile Panel 277 IWLAN)**

SIMATIC 505 PLC or SIMATIC 545, SIMATIC 555 with CP 5434

With the PROFIBUS DP interface, up to 30 SIMATIC HMI Panels can be connected as SLAVES to one SIMATIC 545, 555 via a PROFIBUS network, with plug-in PROFIBUS DP/master interface type CP 5434.

Communication between SIMATIC HMI Panels (DP slaves) and SIMATIC 505 (DP master) runs via PROFIBUS DP message frames in accordance with EN 50170 with higher-level "HMI profile". An application ladder which must be called for each connected SIMATIC HMI Panel is required in the PLC (example of application ladder included in ProTool scope of delivery).

Controller	SIMATIC HMI				WinCC flexible Runtime	Connection via
Target hardware (PROTOCOL) (physics)	OP 77A TP 177A Basic Panels	OP 77B TP 177B DP OP 177B DP TP 177B DP/PN OP 177B DP/PN Mobile Panel 177 DP Mobile Panel 177 PN	TP 277 OP 277 Mobile Panel 277 Mobile Panel 277 IWLAN MP 177 MP 277 MP 377			
<b>SIMATIC 505 (NITP)</b>						
PLC 525, 535, 565T (RS 232)	–	• 1) 2)	• 1) 2)	•		PPX: 2601 094-8001 <sup>3)</sup> See online help <sup>6)</sup>
PLC 545, 555 (RS 232)	–	• 1) 2)	• 1) 2)	•		PPX: 2601 094-8001 <sup>3)</sup> 6XV1 440-2K... (see HMI accessories/ connecting cables)
PLC 535, 545/CPU 1101, 565T (RS 422)	–	• 1)	• 1)	• 4)		See online help <sup>6)</sup>
PLC 545/CPU 1102, 555 (RS 422)	–	• 1)	• 1)	• 4)		See online help <sup>6)</sup>
<b>SIMATIC 505 (PROFIBUS DP + HMI)</b>						
via PROFIBUS DP to 1 x PLC 545, 555 with CP 5434	–	• 1)	• 1)	• 5)		PROFIBUS <sup>7)</sup> (see Catalog IK PI)

- System interface possible
- System interface not possible

- 1) Not Mobile Panel 177 PN, Mobile Panel 277 IWLAN; Mobile Panel 177 DP, Mobile Panel 277 connection via special connecting cable and terminal box (see Mobile Panel); see manual for cable assignment.
- 2) The RS 422/RS 232 adapter 6AV6 671-8XE00-0AX0 is required for Touch Panels, Operator Panels, and Multi Panels
- 3) A standard adapter (9-/25-pin male) is required on the PLC
- 4) A commercially available level converter (RS 232/RS 422) is required on the PC
- 5) Connection via integrated MPI/PROFIBUS interface, use the CP 5611 A2 with a standard PC
- 6) Detailed information (cable assignment) can be found in the online help for WinCC flexible and in the Communication User Manual for Windows-based systems
- 7) Bus connector 6GK1 500-0EA02



### Overview

#### Allen Bradley

Three communication protocols are available for the interface between SIMATIC TP/OP/MP and Allen Bradley:

DF1 interface (not on OP 73, Basic Panel PN, Mobile Panel 177 PN, Mobile Panel 277 IWLAN)

This communication between SIMATIC TP/OP/MP and Allen Bradley runs on the basis of the DF1 protocol; the following have been tested and released:

- Direct connection between a SIMATIC TP/OP/MP and the PG interface on an Allen Bradley PLC5 or the DF1 interface on an Allen Bradley SLC500 (point-to-point link)
- The integration of SIMATIC TP/OP/MP via Allen Bradley KF2 gateway in an Allen Bradley DH+ network. Communication is possible between SIMATIC TP/OP/MP and up to 4 SLC 500 PLCs or PLC5s (multipoint link from the point of view of the SIMATIC TP/OP/MP; only one connection possible with TP 170A)
- The integration of SIMATIC TP/OP/MP via Allen Bradley KF3 gateway in an Allen Bradley DH485 network. Communication is possible between SIMATIC TP/OP/MP and up to 4 PLCs type SLC 500 or MicroLogix (multipoint link from the point of view of the SIMATIC TP/OP/MP; only one connection possible with TP 170A)

DH485 interface (not on OP 73, OP 77A, TP 177A, Basic Panel, Mobile Panel 177 PN, Mobile Panel 277 IWLAN)

This communication between SIMATIC TP/OP/MP and Allen Bradley runs on the basis of the DH485 protocol; the following have been tested and released:

- Direct connection between a SIMATIC TP/OP/MP and an Allen Bradley SLC500 or MicroLogix (point-to-point link)
- The integration of SIMATIC TP/OP/MP via Allen Bradley AIC adapter in an Allen Bradley DH485 network. Communication is possible between SIMATIC TP/OP/MP and up to 4 PLCs type SLC 500 or MicroLogix (multipoint link from the point of view of the SIMATIC TP/OP/MP; only one connection possible with TP 170A)
- The integration of SIMATIC TP/OP/MP (not PC with WinCC flexible Runtime) in an Allen Bradley DH485 network. Communication is possible between SIMATIC TP/OP/MP and up to 4 PLCs type SLC 500 or MicroLogix (multipoint link from the point of view of the SIMATIC TP/OP/MP; only one connection possible with TP 170A)

Ethernet IP protocol (not on OP 73, OP 77A, TP 177A, Basic Panel, OP 77B, TP 177B DP, OP 177B DP, Mobile Panel 177 DP, Mobile Panel 277 IWLAN)

This communication between SIMATIC TP/OP/MP and Allen Bradley runs based on the Ethernet IP protocol; SIMATIC TP/OP/MP integration is tested and released in an Ethernet IP network. Communication is possible between SIMATIC TP/OP/MP and up to 4 ControlLogix or CompactLogix PLCs (multipoint link from the point of view of the SIMATIC TP/OP/MP)

***GE-Fanuc (not on OP 73, OP 77A, TP 177A, Basic Panel, Mobile Panel 177 PN, Mobile Panel 277 IWLAN)***

Communication between SIMATIC TP/OP/MP and GE-Fanuc runs on the basis of the SNP protocol; the following have been tested and released:

- Direct connection between a SIMATIC TP/OP/MP and a GEF 90-Micro, 90-30 or 90-70 (point-to-point link)
- Integration of SIMATIC TP/OP/MP in an RS 422 network via adapter. Communication is possible between SIMATIC TP/OP/MP and up to 4 GEF 90-Micro, 90-30 or 90-70 PLCs (multipoint link from the point of view of the SIMATIC TP/OP/MP; only one connection possible with TP 170A)
- The integration of SIMATIC TP/OP/MP (not PC with ProTool/Pro Runtime or WinCC flexible Runtime) in an RS 422 network. Communication is possible between SIMATIC TP/OP/MP and up to 4 GEF 90-Micro, 90-30 or 90-70 PLCs (multipoint link from the point of view of the SIMATIC TP/OP/MP; only one connection possible with TP 170A)

***LG GLOFA GM (not on OP 73, OP 77A, TP 177A, Basic Panel, Mobile Panel 177 PN, Mobile Panel 277 IWLAN)***

Communication between SIMATIC TP/OP/MP and LG GLOFA GM runs on the basis of the dedicated protocol; the following have been tested and released:

- Connection between a SIMATIC TP/OP/MP and a LG GLOFA GM with Cnet module (point-to-point link)
- Integration of SIMATIC TP/OP/MP in an RS 422 network via LG Cnet module. Communication is possible between SIMATIC TP/OP/MP (not PC with ProTool/Pro Runtime) and up to 4 LG GLOFA GM PLCs on the network (multipoint link from the point of view of the SIMATIC TP/OP/MP; only one connection possible with TP 170A)

***Mitsubishi (not with OP 73, Basic Panel, Mobile Panel 177 PN, Mobile Panel 277 IWLAN)***

Two communication protocols are available for the interface between SIMATIC TP/OP/MP and Mitsubishi:

#### FX protocol

This communication between SIMATIC TP/OP/MP and Mitsubishi runs on the basis of the FX protocol; the direct connection between a SIMATIC TP/OP/MP and the PG interface of a Mitsubishi FX/FX0 (logical point-to-point link) has been tested and released.

#### MP4 protocol

This communication between SIMATIC TP/OP/MP and Mitsubishi runs on the basis of the MP4 protocol; the following have been tested and released:

- Direct connection between a SIMATIC TP/OP/MP and a Mitsubishi Series FX, Series A or Series Q (point-to-point link)
- Integration of SIMATIC TP/OP/MP in an RS 422 network via Mitsubishi converter FX-48SC-IF. Communication is possible between SIMATIC TP/OP/MP and up to 4 Series FX, Series A or Series Q PLCs (multipoint link from the point of view of the SIMATIC TP/OP/MP; only one connection possible with TP 170A)
- The integration of SIMATIC TP/OP/MP (not PC with ProTool/Pro Runtime or WinCC flexible Runtime) in an RS 422 network. Communication is possible between SIMATIC TP/OP/MP and up to 4 Series FX, Series A or Series Q PLCs (multipoint link from the point of view of the SIMATIC TP/OP/MP; only one connection possible with TP 170A)

# Operator panels

## System interfaces with WinCC flexible

### Third-party controllers

#### Overview (continued)

##### Modicon

Two communication protocols are available for the interface between SIMATIC TP/OP/MP and Modicon:

Modbus protocol (not with OP 73, Basic Panel PN, Mobile Panel 177 PN, Mobile Panel 277 IWLAN)

Communication between SIMATIC TP/OP/MP and Modicon runs on the basis of the Modbus protocol; the following have been tested and released:

- Direct connection between a SIMATIC TP/OP/MP and the Modbus interface on a Modicon 984, TSX Quantum or TSX Compact (point-to-point link)
- The integration of a SIMATIC TP/OP/MP via Modicon Modbus PLUS bridge BM85-000/the bridge function on a MODICON 984-145/TSX Quantum in a Modbus PLUS network and communication between SIMATIC TP/OP/MP (Modbus/master) and up to 4 Modicon 984 or TSX Quantum PLCs (Modbus/slave) on the network (multipoint link from the point of view of the SIMATIC TP/OP/MP; only one connection possible with TP 170A).

Modbus TCP/IP protocol (not on OP 73, OP 77A, TP 177A, Basic Panel DP, OP77B, TP 177B DP, OP 177B DP, Mobile Panel 177 DP, Mobile Panel 277 IWLAN)

Communication between SIMATIC TP/OP/MP and Modicon runs on the basis of the Modbus TCP/IP protocol; the following have been tested and released:

- Integration of SIMATIC TP/OP/MP in a Modbus TCP/IP network. Communication is possible between SIMATIC TP/OP/MP and up to 4 Momentum, TSX Micro (TSX 37), TSX Premium (TSX 57), TSX Unity Premium, TSX Quantum or TSX Unity Quantum PLCs (multipoint link from the point of view of the SIMATIC TP/OP/MP)
- The communication between SIMATIC TP/OP/MP via TCP/IP Modbus Plus Bridge 174 CEV 200 40/Modbus PLUS network and Modicon 984 (except 984A, 984B, 984X), TSX Compact, TSX Quantum or TSX Unity Quantum (multipoint link from the point of view of the SIMATIC TP/OP/MP)

##### *Omron (not with OP 73, Basic Panel PN, Mobile Panel 177 PN, Mobile Panel 277 IWLAN)*

Communication between SIMATIC TP/OP/MP and Omron runs on the basis of the Link/MultiLink protocol; the following have been tested and released:

- Direct connection between a SIMATIC TP/OP/MP and an Omron Sysmac C, Sysmac  $\alpha$  or Sysmac CV (point-to-point link)
- Integration of SIMATIC TP/OP/MP in an RS 422 network via Omron converter NT-AL001. Communication is possible between SIMATIC TP/OP/MP and up to 4 Sysmac C, Sysmac  $\alpha$  or Sysmac CV PLCs (multipoint link from the point of view of the SIMATIC TP/OP/MP; only one connection possible with TP 170A)
- The integration of SIMATIC TP/OP/MP (not PC with ProTool/Pro Runtime or WinCC flexible Runtime) in an RS 422 network. Communication is possible between SIMATIC TP/OP/MP and up to 4 Sysmac C, Sysmac  $\alpha$  or Sysmac CV PLCs (multipoint link from the point of view of the SIMATIC TP/OP/MP; only one connection possible with TP 170A)

##### *Telemecanique (not on OP 73, OP 77A, TP 177A, Basic Panel, Mobile Panel 177 PN, Mobile Panel 277 IWLAN, WinCC flexible Runtime)*

Data exchange between SIMATIC TP/OP/MP and Telemecanique runs on the basis of the UNI-TELWAY protocol; the following have been tested and released:

- Connection between a SIMATIC TP/OP/MP (UNI-T/slave) via Telemecanique outlet TSX SCA62 and a Telemecanique TSX 17 or TSX 47/67/87/107 (UNI-T/master) (logical point-to-point link)
- Connection between a SIMATIC TP/OP/MP (UNI-T/slave) via Telemecanique outlets TSX SCA62 + ACC01 and a Telemecanique TSX 37 or TSX 57 (UNI-T/master) (logical point-to-point link)
- The integration of a SIMATIC TP/OP/MP via Telemecanique outlet TSX SCA62 in a UNI-TELWAY network and communication between SIMATIC TP/OP/MP (UNI-T/slave) and up to 4 TSX 17, TSX 37, TSX 57 or TSX 47/67/87/107 PLCs (UNI-T/master or slave) on the network (multipoint link from the point of view of the SIMATIC TP/OP/MP; only one connection possible with TP 170A).

# Operator panels

## System interfaces with WinCC flexible

### Third-party controllers

#### Overview (continued)

Controller	SIMATIC HMI					
Target hardware (PROTOCOL) (physics)	OP 77A TP 177A	Basic Panels	OP 77B TP 177B DP OP 177B DP TP 177B DP/PN OP 177B DP/PN Mobile Panel 177 DP / 177 PN	TP 277 OP 277 Mobile Panel 277 / 277 IWLAN MP 177 MP 277 MP 377	WinCC flexible Runtime	Connection via
<b>Allen Bradley (DF1)</b>						
<b>SLC 500/03,04,05</b> or <b>MicroLogix</b> (RS 232)	• 1) 2)	• 1) 2)	• 1) 2)	• 1) 2)	•	<b>1747 CP3</b> <sup>7)</sup> see FAQ <sup>9)</sup>
<b>PLC 5/11,20,30,40,60,80</b> (RS 232)	• 1) 2)	• 1) 2)	• 1) 2)	• 1) 2)	•	<b>1784 CP10</b> <sup>7)</sup> see FAQ <sup>9)</sup>
<b>PLC 5/11,20,30,40,60,80</b> (RS 422)	• 1)	• 1)	• 1)	• 1)	–	see FAQ <sup>9)</sup>
via <b>KF2 gateway</b> and <b>DH+ network</b> with up to 4 x <b>SLC 50/04</b> or <b>PLC 5/11,20,30,40,60,80</b> (RS 232)	• 1) 2)	• 1) 2)	• 1) 2)	• 1) 2)	•	<b>1784 CP10</b> <sup>7) 8)</sup> see FAQ <sup>9)</sup>
via <b>KF2 gateway</b> and <b>DH+ network</b> with up to 4 x <b>SLC 50/04</b> or <b>PLC 5/11,20,30,40,60,80</b> (RS 422)	• 1)	• 1)	• 1)	• 1)	–	see FAQ <sup>9)</sup>
via <b>KF3 gateway</b> and <b>DH485 network</b> with up to 4 x <b>SLC 500/00,01,02,03,04,05</b> or <b>MicroLogix</b> (RS 232)	• 1) 2)	• 1) 2)	• 1) 2)	• 1) 2)	•	<b>1784 CP10</b> <sup>7) 8)</sup> see FAQ <sup>9)</sup>
<b>Allen Bradley (DH485)</b>						
<b>SLC 500/03,04,05</b> or <b>MicroLogix</b> (RS 232)	–	–	• 1) 2)	• 1) 2)	•	see FAQ <sup>9)</sup>
via <b>AIC adapter</b> and <b>DH485 network</b> with up to 4 x <b>SLC 500</b> or <b>MicroLogix</b> (RS 232)	–	–	• 1) 2)	• 1) 2)	•	see FAQ <sup>9)</sup>
via <b>DH485 network</b> with up to 4 x <b>SLC 500/00,01,02,03,04,05</b> or <b>MicroLogix</b> (RS 485)	–	–	• 1)	• 1)	–	see FAQ <sup>9)</sup>
<b>Allen Bradley (Ethernet IP)</b>						
via <b>Ethernet IP network</b> with up to 4 x <b>ControlLogix</b> (1756-L61, 1756-L62, 1756-L63, 1756-L64, 1756-L65, each with Ethernet module 1756-ENBT) <b>GuardLogix</b> (1756-L61S, 1756-L62S, 1756-L61S, each with Ethernet module 1756-ENBT) or <b>CompactLogix</b> (1769-L32E, 1769-L35E, each with Ethernet interface onboard)	–	–	• 3) 4)	• 4)	•	see FAQ <sup>9)</sup>

- System interface possible
- System interface not possible

- 1) Not Basic Panel PN, Mobile Panel 177 PN, Mobile Panel 277 IWLAN; Mobile Panel 177 DP, Mobile Panel 277 connection via special connecting cable and terminal box (see Mobile Panel); see manual for cable assignment
- 2) The RS 422/RS 232 adapter 6AV6 671-8XE00-0AX0 is required for Basic Panel, Touch Panel, Operator Panel, and Multi Panel
- 3) Only TP 177B DP/PN, OP 177B DP/PN, Mobile Panel 177 PN
- 4) Mobile Panel 177 PN, Mobile Panel 277 connection via special connecting cable and terminal box (see Mobile Panel); see manual for cable assignment

- 5) Not Mobile Panel 277 IWLAN (wireless interface, see Mobile Panel)
- 6) Connection via integrated Industrial Ethernet interface; use the CP 1612 with a standard PC
- 7) Allen Bradley PC cable
- 8) Cable for connection to KF2/KF3 gateway; a gander changer (25-pin socket/25-pin socket) is required on the gateway side
- 9) Detailed information (cables used) see FAQ: <http://support.automation.siemens.com/WW/view/en/29034071> in the online help for WinCC flexible and in the Communication User Manual for Windows-based systems

# Operator panels

## System interfaces with WinCC flexible

### Third-party controllers

#### Overview (continued)

Controller	SIMATIC HMI					
Target hardware (PROTOCOL) (physics)	OP 77A TP 177A	Basic Panels	OP 77B TP 177B DP OP 177B DP TP 177B DP/PN OP 177B DP/PN Mobile Panel 177 DP Mobile Panel 177 PN	TP 277 OP 277 Mobile Panel 277 Mobile Panel 277 IWLAN MP 177 MP 277 MP 377	WinCC flexible Runtime	Connection via
<b>GE-Fanuc (SNP)</b>						
<b>GEF 90-Micro, 90-30, 90-70</b> (RS 232)	–	–	• 1) 2)	• 1) 2)	•	see FAQ 4)
via <b>adapter</b> with up to 4 x <b>GEF 90-Micro, 90-30, 90-70</b> (RS 232)	–	–	• 1) 2)	• 1) 2)	•	see FAQ 4)
via <b>adapter</b> with up to 4 x <b>GEF 90-Micro, 90-30, 90-70</b> (RS 422)	–	–	• 1)	• 1)	–	see FAQ 4)
<b>LG GLOFA (Dedicated)</b>						
<b>GLOFA-GM with Cnet module</b> (RS 232)	–	–	• 1) 2)	• 1) 2)	•	see FAQ 4)
With up to 4 x <b>GLOFA-GM with Cnet module</b> (RS 422)	–	–	• 1)	• 1)	–	see FAQ 4)
<b>Mitsubishi FX</b>						
<b>FX0</b> (RS 422)	–	–	–	–	•	SC-09 6)
	–	–	• 1)	• 1)	–	see FAQ 4)
<b>FX0n, FX1n, FX2n</b> (RS 422)	–	–	–	–	•	SC-09 6)
	–	–	• 1)	• 1)	–	see FAQ 4)
• <b>FX1N-14MR-DS</b> • <b>FX1S-10MR-DS</b> • <b>FX2N-16MR-DS</b> (RS 422)	• 1) 6)	• 1) 6)	–	–	–	SC-09 6)
<b>Mitsubishi (MP4)</b>						
• <b>Series FX</b> with communication module • <b>Series A</b> (AnN, AnA, AnU, AnS) with interface module • <b>Series Q</b> (QnA, QnAS) with interface module (RS 232)	–	–	• 1) 2)	• 1) 2)	•	see FAQ 4)
via <b>FX-48SC-IF converter</b> with up to 4 PLCs • <b>Series FX</b> with communication module • <b>Series A</b> (AnN, AnA, AnU, AnS) with interface module • <b>Series Q</b> (QnA, QnAS) with interface module (RS 232)	–	–	• 1) 2)	• 1) 2)	•	see FAQ 4)
with up to 4 PLCs • <b>Series FX</b> with communication module • <b>Series A</b> (AnN, AnA, AnU, AnS) with interface module • <b>Series Q</b> (QnA, QnAS) with interface module (RS 422)	–	–	• 1)	• 1)	–	see FAQ 4)

- System interface possible
- System interface not possible

1) Not Mobile Panel 177 PN, Mobile Panel 277 IWLAN;  
Mobile Panel 177 DP, Mobile Panel 277 connection via special  
connecting cable and terminal box (see Mobile Panel); see manual for  
cable assignment

2) The RS 422/RS 232 adapter 6AV6 671-8XE00-0AX0 is required for  
Touch Panels, Operator Panels, and Multi Panels

3) With connection using a Mitsubishi PC cable, an 15-pin/9-pin adapter  
6XV1 440-2UE32 is required

4) Detailed information (cables used) see FAQ:  
<http://support.automation.siemens.com/WW/view/en/29034071> in the  
online help for WinCC flexible and in the Communication User Manual  
for Windows-based systems

5) Mitsubishi PC cable with integrated level converter RS 232/RS422

6) WinCC flexible 2008 ServicePack 2 and higher

## Overview (continued)

Controller	SIMATIC HMI					
Target hardware (PROTOCOL) (physics)	OP 77A TP 177A	Basic Panels	OP 77B TP 177B DP OP 177B DP TP 177B DP/PN OP 177B DP/PN Mobile Panel 177 DP Mobile Panel 177 PN	TP 277 OP 277 Mobile Panel 277 Mobile Panel 277 IWLAN MP 177 MP 277 MP 377	WinCC flexible Runtime	Connection via
<b>Modicon (Modbus)</b>						
984-120, 130, 131, 141, 145, 380, 381, 185, 480, 485, 680, 685, 780, 785, or TSX-Quantum-CPU 113, 213, 424, 434, 534 (RS 232)	• 1) 2)	• 1) 2)	• 1) 2)	• 1) 2)	•	See FAQ 7)
via <b>bridge BM85-000</b> or <b>PLC with bridge function.</b> / <i>Modbus PLUS – network</i> with up to 4 x <b>984-120</b> , ... or <b>TSX Quantum - CPU 113</b> , or <b>TSX Contact</b> (RS 232)	• 1) 2)	• 1) 2)	• 1) 2)	• 1) 2)	•	See FAQ 7)
<b>TSX Compact</b> (RS 232)	• 1) 2)	• 1) 2)	• 1) 2)	• 1) 2)	•	See FAQ 7)
<b>Modicon (Modbus TCP/IP)</b>						
via <i>Modbus TCP/IP – network</i> with up to 4 x <b>TSX Unity Quantum</b> or <b>TSX Unity Premium</b> or <b>TSX Quantum</b> or <b>TSX Quantum</b> with <b>TCP/IP module 140 NOE 771 01</b> or <b>TSX Unity Premium</b> or <b>TSX Premium</b> with <b>TCP/IP module TSX ETY 110</b> or <b>TSX Micro</b> with <b>TCP/IP module TSX ETY 410</b> or <b>Momentum</b> with <b>CPU adapter 171 CCC 980 30</b>	–	–	• 3) 4)	• 4) 5)	•	
via <b>TCP/IP modbusplus bridge 174 CEV 200 40</b> / <i>Modbus PLUS – network</i> with up to 4 x <b>TSX Unity Quantum</b> or <b>TSX Quantum</b> or <b>TSX Compact</b> or <b>984-120</b> , ... (except <b>984A</b> , <b>984B</b> , <b>984X</b> )	–	–	• 3) 4)	• 4) 5)	•	
via <i>Modbus TCP/IP – network</i> with up to 4 x <b>TSX Unity Quantum</b> or <b>TSX Unity Premium</b> or <b>TSX Quantum</b> or <b>TSX Quantum</b> with <b>TCP/IP module 140NOE 771 01</b> or <b>TSX Unity Premium</b> or <b>TSX Premium</b> with <b>TCP/IP module TSX ETY 110</b> or <b>TSX Micro</b> with <b>TCP/IP module TSX ETY 410</b> or <b>Momentum</b> with <b>CPU adapter 171 CCC 980 30</b>	• 3) 8)	• 3) 8)	–	–	–	
via <b>TCP/IP modbusplus bridge 174 CEV 200 40</b> / <i>Modbus PLUS – network</i> with up to 4 x <b>TSX Unity Quantum</b> or <b>TSX Quantum</b> or <b>TSX Compact</b>	• 3) 8)	• 3) 8)	–	–	–	

- System interface possible
- System interface not possible

- 1) Not Mobile Panel 177 PN, Mobile Panel 277 IWLAN; Mobile Panel 177 DP, Mobile Panel 277 connection via special connecting cable and terminal box (see Mobile Panel); see manual for cable assignment
- 2) The RS 422/RS 232 adapter 6AV6 671-8XE00-0AX0 is required for Touch Panels, Operator Panels, and Multi Panels
- 3) Only TP 177B DP/PN, OP 177B DP/PN, Mobile Panel 177 PN
- 4) Mobile Panel 177 PN, Mobile Panel 277 connection via special connecting cable and terminal box (see Mobile Panel); see manual for cable assignment

- 5) Not Mobile Panel 277 IWLAN (wireless interface, see Mobile Panel)
- 6) Connection via integrated Industrial Ethernet interface; use the CP 1612 with a standard PC
- 7) Detailed information (cables used) see FAQ: <http://support.automation.siemens.com/WW/view/en/29034071> in the online help for WinCC flexible and in the Communication User Manual for Windows-based systems
- 8) WinCC flexible 2008 ServicePack 2 and higher

# Operator panels

## System interfaces with WinCC flexible

### Third-party controllers

#### Overview (continued)

Controller	SIMATIC HMI					
Target hardware (PROTOCOL) (physics)	OP 77A TP 177A	Basic Panels	OP 77B TP 177B DP OP 177B DP TP 177B DP/PN OP 177B DP/PN Mobile Panel 177 DP Mobile Panel 177 PN	TP 277 OP 277 Mobile Panel 277 Mobile Panel 277 IWLAN MP 177 MP 277 MP 377	WinCC flexible Runtime	Connection via

#### Omron (Link/MultiLink)

<ul style="list-style-type: none"> <li>• <b>SYSMAC C</b> (except CPU CQM1 – CPU 11/21)</li> <li>• <b>SYSMAC Alpha</b></li> <li>• <b>SYSMAC CV</b> (RS 232)</li> </ul>	–	–	• 1) 2)	• 1) 2)	•	see FAQ <sup>3)</sup>
via <b>NT-AL001 converter</b> with up to 4 PLCs	–	–	• 1) 2)	• 1) 2)	•	see FAQ <sup>3)</sup>
<ul style="list-style-type: none"> <li>• <b>SYSMAC C</b> (except CPU CQM1 – CPU 11/21)</li> <li>• <b>SYSMAC Alpha</b></li> <li>• <b>SYSMAC CV</b> (RS 232)</li> </ul>	–	–	• 1)	• 1)	–	see FAQ <sup>3)</sup>
with up to 4 PLCs	–	–	• 1)	• 1)	–	see FAQ <sup>3)</sup>
<ul style="list-style-type: none"> <li>• <b>SYSMAC C</b> (except CPU CQM1 – CPU 11/21)</li> <li>• <b>SYSMAC Alpha</b></li> <li>• <b>SYSMAC CV</b> (RS 422)</li> <li>• CP1L-L14DT1-D</li> <li>• C1H-Y20DT-D</li> <li>• CJ1M CPU11</li> </ul>	• 1) 4)	• 1) 4)	–	–	–	

#### Telemecanique (UNI-TELWAY)

via <b>TSX SCA62 outlet</b> with <b>TSX 17</b> or <b>TSX 47/67/87/107</b> (RS 485)	–	–	• 1)	• 1)	–	see FAQ <sup>3)</sup>
via <b>TSX SCA62 + ACC01 outlets</b> with <b>TSX 37/57</b> (RS 485)	–	–	• 1)	• 1)	–	see FAQ <sup>3)</sup>
via <b>TSX SCA62 outlet</b> and <b>UNI-TELWAY network</b> with 4 x <b>TSX 17</b> or <b>TSX 37/57</b> (+ACC 01) or <b>TSX 47/67/87/107</b> (RS 485)	–	–	• 1)	• 1)	–	see FAQ <sup>3)</sup>

- System interface possible
- System interface not possible

- 1) Not Mobile Panel 177 PN, Mobile Panel 277 IWLAN;  
Mobile Panel 177 DP, Mobile Panel 277 connection via special connecting cable and terminal box (see Mobile Panel); see manual for cable assignment.
- 2) The RS 422/RS 232 adapter 6AV6 671-8XE00-0AX0 is required for Touch Panels, Operator Panels, and Multi Panels
- 3) Detailed information (cables used) see FAQ:  
<http://support.automation.siemens.com/WW/view/en/29034071> in the online help for WinCC flexible and in the Communication User Manual for Windows-based systems
- 4) WinCC flexible 2008 ServicePack 2 and higher

# Operator panels

## System interfaces with WinCC (TIA Portal)

### System interfaces with WinCC (TIA Portal)

#### Overview

The SIMATIC Touch Panel (TP), Operator Panel (OP), Basic Panel, Comfort Panel, Mobile Panel, multifunctional platforms (MP) <sup>1)</sup> offer HMI functionality for the control systems:

- SIMATIC S7
- SINUMERIK <sup>2)</sup>
- Non-Siemens controllers:
  - Allen Bradley
  - Mitsubishi
  - Modicon
  - Omron

For more detailed information, refer to the WinCC flexible user manual, the "Windows-based systems communication" manual, and the WinCC flexible online help.

- <sup>1)</sup> For the sake of simplicity, SIMATIC Panel is always used in the text below. This is not restrictive, as the information is valid for all systems referred to above. If there are constraints, direct reference is made to them in the text.
- <sup>2)</sup> Required under WinCC flexible: "SINUMERIK HMI copy license WinCC flexible CE" and "SINUMERIK HMI copy license OA". For configuring, a "SINUMERIK HMI engineering package WinCC flexible" is also necessary.

#### Note:

Interface options for HMI devices: See the individual device descriptions.

OPC communication and HTTP communication are offered for all Panels with an integrated Ethernet interface. Both OPC and HTTP communication can be used in parallel with the process links to SIMATIC S7 or non-Siemens PLCs.

#### OPC communication

OPC Data Access is an open standard for exchanging both local and remote variables between various applications via Industrial Ethernet. The original version of OPC is based on Microsoft COM/DCOM and, therefore, requires a Microsoft Windows-based PC operating system (not Windows CE) on both clients and servers. As OPC XML, communication is based on the Internet standard SOAP/XML and is, therefore, suitable for embedded systems with Windows CE.

#### HTTP communication for variable exchange between SIMATIC HMI systems

Communication based on HTTP message frames enables variables to be exchanged between SIMATIC HMI systems.

Communication standard	SIMATIC HMI				
Version	Comfort Panel	TP 177B DP/PN OP 177B DP/PN Mobile Panel 177 PN MP 177	TP 277 OP 277 Mobile Panel 277	MP 277 MP 377	WinCC Advanced Runtime WinCC Professional Runtime

#### OPC Data Access V2.05a + OPC Data Access XML V1.00

OPC DA Client (COM/DCOM)	–	–	–	–	•
OPC DA server (COM/DCOM)	–	–	–	–	•
OPC XML DA client (SOAP/XML)	–	–	–	–	• <sup>1)</sup>
OPC XML DA server (SOAP/XML)	•	–	–	•	–

#### HTTP communication for variable exchange between SIMATIC HMI systems

HTTP client	•	•	•	•	•
HTTP server	•	•	•	•	•

- System interface possible
- System interface not possible

- <sup>1)</sup> Only through DCOM/XML gateway in scope of delivery of WinCC Advanced for access to OPC XML server of the SIMATIC Panel



# Operator panels

## System interfaces with WinCC (TIA Portal)

### SIMATIC S7

#### Overview

The following types of interface are differentiated in respect of the link between the SIMATIC Panels and SIMATIC S7 controllers:

- **PROFINET interface:**  
Coupling of SIMATIC Panel to SIMATIC S7 controllers via Industrial Ethernet TCP/IP using the integrated PROFINET interface of the CPU or, alternatively, a PROFINET interface module.
- **MPI/PROFIBUS interface:**  
Coupling of SIMATIC Panel to SIMATIC S7 controllers via MPI/PROFIBUS using the integrated MPI/PROFIBUS interface of the CPU for S7-300, S7-400 or the integrated PPI interface of the CPU in the case of S7-200 or, alternatively, a PROFIBUS interface module in the case of S7-1200, S7-300 and S7-400.
- **PPI interface:**  
Coupling of SIMATIC Panel to SIMATIC S7-200 via PPI network using the integrated PPI interface of the CPU

The maximum possible number of S7 connections of one CPU is determined by its performance capacity (see Catalog ST 70); from the point of view of SIMATIC Panel, the following restrictions apply:

- OP 73: max. 2 connections
- OP 77A, TP 177A, Basic Panel, OP 77B, TP177B, OP 177B, Mobile Panel 177: max. 4 connections
- Comfort Panel, TP 277, OP 277; Mobile Panel 277, MP 177, MP 277, MP 377: max. 6 connections
- PC with PC WinCC Runtime Advanced: max. 8 connections

#### PPI interface

The PPI interface is a point-to-point connection between a SIMATIC Panel (PPI master) or alternatively a PG (PPI master) and an S7-200 (PPI slave).

#### MPI/PROFIBUS interface or PROFINET interface

The corresponding multipoint-enabled communication interfaces of SIMATIC Panels and SIMATIC S7 are used.

The following are possible:

- Interface between one or a number of SIMATIC Panels (MPI master) and one or a number of S7-1200/300/400s or WinAC (MPI master) (possible network topology: MPI/PROFIBUS or Industrial Ethernet, TCP/IP)
- Interface between one or a number of SIMATIC Panels (MPI master) and one or a number of S7-200s (MPI slave) <sup>1)</sup> (possible network topology: PPI, MPI/PROFIBUS)

Unlike PPI connections, MPI connections are static connections that are set up during booting and then monitored.

The original format of a master/master link has been joined by a master/slave link, which has enabled integration of the S7-200 (except CPU 212). <sup>1)</sup>

In principle, this type of information exchange between SIMATIC Panels and SIMATIC S7 is independent of the network used, PPI, MPI/PROFIBUS or Industrial Ethernet: SIMATIC Panels are S7 clients and SIMATIC S7 CPUs are S7 servers.

<sup>1)</sup> Constraints with regard to baud rate for S7-200; see Catalog ST 70.



# Operator panels

## System interfaces with WinCC (TIA Portal)

SIMATIC S7

**Overview** (continued)

Controller	SIMATIC HMI					
Target hardware (PROTOCOL) (physics)	OP 73 OP 77A TP 177A	Basic Panel	Comfort Panel	OP 77B TP 177B DP OP 177B DP TP 177B DP/PN OP 177B DP/PN Mobile Panel 177 DP <sup>1)</sup> Mobile Panel 177 PN <sup>1)</sup>	TP 277 OP 277 Mobile Panel 277 <sup>1)</sup> MP 177 MP 277 MP 377	WinCC Runtime Advanced
<b>SIMATIC S7-1200</b> <sup>2)</sup>						
Via Ethernet (TCP/IP) to max. 4 x S7-1200	–	• <sup>5)</sup>	•	• <sup>5)</sup>	•	•
Via MPI or PROFIBUS network to max. 4 x S7-1200 with PROFIBUS module (DP-Master) CM 1243-5	• <sup>3) 4)</sup>	• <sup>6)</sup>	•	• <sup>5)</sup>	•	• <sup>7)</sup>
<b>SIMATIC S7-300, -400, Win AC</b> <sup>2)</sup>						
Via Ethernet (TCP/IP) to max. 4 x S7-300, -400, WinAC	–	• <sup>5)</sup>	•	• <sup>5)</sup>	•	•
over MPI or PROFIBUS network to up to 4 x S7-300, S7-400, WinAC	• <sup>3) 4)</sup>	• <sup>6)</sup>	•	• <sup>6)</sup>	•	• <sup>7)</sup>
<b>SIMATIC S7-200</b> <sup>2)</sup>						
Via Ethernet (TCP/IP) (MPI protocol) to max. 4 x S7-200	–	• <sup>5)</sup>	•	• <sup>5)</sup>	•	•
over MPI or PROFIBUS network (MPI protocol) to up to 4 x S7-200	• <sup>3) 4)</sup>	• <sup>6)</sup>	• <sup>8)</sup>	• <sup>6) 8)</sup>	• <sup>8)</sup>	• <sup>7) 8)</sup>
over PPI network (MPI protocol) to up to 4 x S7-200	• <sup>3) 4)</sup>	• <sup>6)</sup>	–	• <sup>9)</sup>	–	–
over PPI network (PPI protocol) to max. 1 x S7-200	–	–	• <sup>10)</sup>	• <sup>10)</sup>	• <sup>10)</sup>	• <sup>7) 10)</sup>

- System interface possible
- System interface not possible

Note:

Detailed information regarding cable layout can be found in the online help for WinCC.

- <sup>1)</sup> Mobile Panel connection via special connecting cable and terminal box (see Mobile Panel), see Manual for cable layout.
- <sup>2)</sup> Controllers can be combined as desired
- <sup>3)</sup> OP 73 can only be interfaced with max. 2 x SIMATIC S7 (MPI); network operation (parallel PG, etc.) possible
- <sup>4)</sup> Max. transfer rate: 1.5 Mbit/s
- <sup>5)</sup> Only Basic Panel PN, TP 177B DP/PN, OP 177B DP/PN, Mobile Panel 177 PN
- <sup>6)</sup> Not Basic Panel PN, Mobile Panel 177 PN
- <sup>7)</sup> Connection via integrated MPI/PROFIBUS interface; use the CP 5611 A2 with a standard PC
- <sup>8)</sup> Only on passive S7-200; OP 77B also on active S7-200
- <sup>9)</sup> Only OP 77B
- <sup>10)</sup> Can be interfaced via PPI to max. 1 x S7-200 (PPI); network operation (parallel PG, etc.) is possible

# Operator panels

## System interfaces with WinCC (TIA Portal)

### Third-party controllers

#### Overview

The SIMATIC Touch Panel (TP), Operator Panel (OP), Basic Panel, Comfort Panel, Mobile Panel, multifunctional platforms (MP) and the SIMATIC HMI software package for PC WinCC Runtime Advanced support the following protocols for the linking of control systems from other manufacturers:

- Allen Bradley
  - Ethernet IP protocol
  - DF1 protocol
- Mitsubishi
  - MC TCP/IP protocol
  - FX protocol

- Modicon
  - Modbus TCP/IP protocol
  - Modbus RTU protocol
- Omron
  - Link/Multi-Link protocol

The following table contains more detailed information.

#### Coupling overview

Controller	SIMATIC HMI					
Target hardware (PROTOCOL) (physics)	OP 77A TP 177A	Basic Panel	Comfort Panel	OP 77B TP 177B DP OP 177B DP TP 177B DP/PN OP 177B DP/PN Mobile Panel 177 DP <sup>1)</sup> Mobile Panel 177 PN <sup>1)</sup>	TP 277 OP 277 Mobile Panel 277 <sup>1)</sup> MP 177 MP 277 MP 377	WinCC Runtime Advanced
<b>Allen Bradley (Ethernet IP)</b>						
via Ethernet TCP/IP network to max. 4 x controllers <sup>2)</sup>	—	• <sup>3)</sup>	•	• <sup>3)</sup>	•	•
• ControlLogix 1756-L6x, -L6xS with Ethernet module 1756-ENBT						
• Guard Logix System						
• CompactLogix 1769-L2xE, -L3xE						
• CompactLogix 1769-L4x with ETHERNET module 1768-ENBT						
• SLC 5/05						
• MicroLogix 1100, 1400						
<b>Allen Bradley (DF1)</b>						
to max. 1 x controller	• <sup>4)</sup>	• <sup>4)</sup> <sup>5)</sup>	• <sup>4)</sup>	• <sup>4)</sup> <sup>5)</sup>	• <sup>4)</sup>	• <sup>6)</sup>
• SLC 5/03, /04, /05						
• MicroLogix (RS 232)						
to max. 1 x controller	• <sup>4)</sup>	• <sup>4)</sup> <sup>5)</sup>	• <sup>4)</sup>	• <sup>4)</sup> <sup>5)</sup>	• <sup>4)</sup>	• <sup>7)</sup>
• PLC5/11, /20, /30, /40, /60, /80 (RS 232)						
via KF2 gateway and DH+ network to max. 4 x controllers <sup>2)</sup>	• <sup>4)</sup>	• <sup>4)</sup> <sup>5)</sup>	• <sup>4)</sup>	• <sup>4)</sup> <sup>5)</sup>	• <sup>4)</sup>	• <sup>7)</sup> <sup>8)</sup>
• SLC 5/04						
• PLC5/11, /20, /30, /40, /60, /80 (RS 232)						
via KF2 gateway and DH+ network to max. 4 x controllers <sup>2)</sup>	•	• <sup>5)</sup>	•	• <sup>5)</sup>	•	—
• SLC 5/04						
• PLC5/11, /20, /30, /40, /60, /80 (RS 422)						
via KF3 gateway and DH485 network to max. 4 x controllers <sup>2)</sup>	• <sup>4)</sup>	• <sup>4)</sup> <sup>5)</sup>	• <sup>4)</sup>	• <sup>4)</sup> <sup>5)</sup>	• <sup>4)</sup>	• <sup>7)</sup> <sup>8)</sup>
• SLC 500						
• MicroLogix (RS 232)						

- System interface possible
- System interface not possible

<sup>1)</sup> Mobile Panel connection via special connecting cable and terminal box (see Mobile Panel), see Manual for cable layout.

<sup>2)</sup> The following listed controllers can be combined as required

<sup>3)</sup> Only Basic Panel PN, TP 177B DP/PN, OP 177B DP/PN, Mobile Panel 177 PN

<sup>4)</sup> For Basic Panel, Touch Panel, Operator Panel, Comfort Panel, Multi Panel, the RS 422/RS 232 adapter 6AV6 671-8XE00-0AX0 is required

<sup>5)</sup> Not Basic Panel PN, Mobile Panel 177 PN

<sup>6)</sup> Connection via Allen Bradley PC cable 1747 CP3

<sup>7)</sup> Connection via Allen Bradley PC cable 1784 CP10

<sup>8)</sup> For connection to KF2/KF3 gateway, a gender-changer (25-pin socket/25-pin socket) is required on the gateway side

#### Note:

For detailed information on pin assignment, refer to Online Help of WinCC; see also FAQs:

<http://support.automation.siemens.com/WW/view/en/29034071>

# Operator panels

## System interfaces with WinCC (TIA Portal)

### Third-party controllers

#### Overview (continued)

Controller	SIMATIC HMI					
Target hardware (PROTOCOL) (physics)	OP 77A TP 177A	Basic Panel	Comfort Panel	OP 77B TP 177B DP OP 177B DP TP 177B DP/PN OP 177B DP/PN Mobile Panel 177 DP <sup>1)</sup> Mobile Panel 177 PN <sup>1)</sup>	TP 277 OP 277 Mobile Panel 277 <sup>1)</sup> MP 177 MP 277 MP 377	WinCC Runtime Advanced
<b>Mitsubishi (MC TCP/IP)</b>						
via Ethernet IP network to max. 4 x controllers <sup>2)</sup> • FX series FX3G, FX3U, FX3UC with Ethernet module FX3U ENET, • Series Q with Ethernet module QJ71E71-100 • iQ series/QnUD QnUDEH	–	• <sup>3)</sup>	•	• <sup>3)</sup>	•	•
<b>Mitsubishi FX (serial)</b>						
to max. 1 x controller FX series FX1N, FX2N (RS 232)	•	• <sup>4)</sup>	•	• <sup>4)</sup>	•	• <sup>5)</sup>

- System interface possible
- System interface not possible

- <sup>1)</sup> Mobile Panel connection via special connecting cable and terminal box (see Mobile Panel), see Manual for cable layout.
- <sup>2)</sup> The following listed controllers can be combined as required
- <sup>3)</sup> Only Basic Panel PN, TP 177B DP/PN, OP 177B DP/PN, Mobile Panel 177 PN
- <sup>4)</sup> Not Basic Panel PN, Mobile Panel 177 PN
- <sup>5)</sup> Connection using a Mitsubishi PC cable SC-09 with integrated level converter RS 232/RS422

#### Note:

For detailed information on pin assignment, refer to Online Help of WinCC; see also FAQs:

<http://support.automation.siemens.com/WW/view/en/29034071>

# Operator panels

## System interfaces with WinCC (TIA Portal)

### Third-party controllers

#### Overview (continued)

Controller	SIMATIC HMI					
Target hardware (PROTOCOL) (physics)	OP 77A TP 177A	Basic Panel	Comfort Panel	OP 77B TP 177B DP OP 177B DP TP 177B DP/PN OP 177B DP/PN Mobile Panel 177 DP <sup>1)</sup> Mobile Panel 177 PN <sup>1)</sup>	TP 277 OP 277 Mobile Panel 277 <sup>1)</sup> MP 177 MP 277 MP 377	WinCC Runtime Advanced
<b>Modicon (MODBUS TCP/IP)</b>						
Via MODBUS TCP/IP network to max. 4 x controllers <sup>2)</sup>	–	• <sup>3)</sup>	•	• <sup>3)</sup>	•	•
<ul style="list-style-type: none"> <li>• Concept Quantum, Unity Quantum</li> <li>• Momentum</li> <li>• Premium (TSX57)</li> <li>• TSX Micro (TSX37)</li> <li>• Modicon M340 20x0 (except 2010)</li> </ul>						
Via TCP/IP Modbus Plus Bridge 174 CEV 200 40 and MODBUS PLUS network to max. 4 x controllers <sup>2)</sup>	–	• <sup>3)</sup>	•	• <sup>3)</sup>	•	•
<ul style="list-style-type: none"> <li>• Concept Quantum, Unity Quantum</li> <li>• Momentum</li> <li>• Compact</li> </ul>						
<b>Modicon (MODBUS RTU)</b>						
to max. 1 x controller	• <sup>4)</sup>	• <sup>4)</sup> <sup>5)</sup>	• <sup>4)</sup>	• <sup>4)</sup> <sup>5)</sup>	• <sup>4)</sup>	•
<ul style="list-style-type: none"> <li>• Concept Quantum</li> <li>• Momentum</li> <li>• Compact (RS 232)</li> </ul>						
Via bridge BM85-000 or PLC with bridge functionality and MODBUS PLUS network to max. 4 x controllers <sup>2)</sup>	• <sup>4)</sup>	• <sup>4)</sup> <sup>5)</sup>	• <sup>4)</sup>	• <sup>4)</sup> <sup>5)</sup>	• <sup>4)</sup>	•
<ul style="list-style-type: none"> <li>• Concept Quantum</li> <li>• Compact (RS 232)</li> </ul>						

- System interface possible
- System interface not possible

<sup>1)</sup> Mobile Panel connection via special connecting cable and terminal box (see Mobile Panel), see Manual for cable layout.

<sup>2)</sup> The following listed controllers can be combined as required

<sup>3)</sup> Only Basic Panel PN, TP 177B DP/PN, OP 177B DP/PN, Mobile Panel 177 PN

<sup>4)</sup> For Basic Panel, Touch Panel, Operator Panel, Comfort Panel, Multi Panel, the RS 422/RS 232 adapter 6AV6 671-8XE00-0AX0 is required

<sup>5)</sup> Not Basic Panel PN, Mobile Panel 177 PN

#### Note:

For detailed information on pin assignment, refer to Online Help of WinCC; see also FAQs:

<http://support.automation.siemens.com/WW/view/en/29034071>

# Operator panels

## System interfaces with WinCC (TIA Portal)

### Third-party controllers

#### Overview (continued)

Controller	SIMATIC HMI					
Target hardware (PROTOCOL) (physics)	OP 77A TP 177A	Basic Panel	Comfort Panel	OP 77B TP 177B DP OP 177B DP TP 177B DP/PN OP 177B DP/PN Mobile Panel 177 DP <sup>1)</sup> Mobile Panel 177 PN <sup>1)</sup>	TP 277 OP 277 Mobile Panel 277 <sup>1)</sup> MP 177 MP 277 MP 377	WinCC Runtime Advanced
<b>Omron (Link/MultiLink)</b>						
to max. 1 x controller • CP1L, CP1H, CP1E • CJ1M, CJ1H, CJ1G • CJ2H • CS1G, CS1H, CS1D • CP2MC (RS 232)	–	–	• <sup>3)</sup>	• <sup>3) 4)</sup>	• <sup>3)</sup>	•
Via converter NT-AL001 and RS422 network to max. 4 x controllers <sup>2)</sup> • CP1L, CP1H, CP1E • CJ1M, CJ1H, CJ1G • CJ2H • CS1G, CS1H, CS1D • CP2MC (RS 232)	–	–	• <sup>3)</sup>	• <sup>3) 4)</sup>	• <sup>3)</sup>	•
Via RS422 network to max. 4 x controllers <sup>2)</sup> • CP1L, CP1H, CP1E • CJ1M, CJ1H, CJ1G (RS 422)	•	• <sup>5)</sup>	•	• <sup>4)</sup>	• <sup>4)</sup>	–
Via RS422 network to max. 4 x controllers <sup>2)</sup> • CJ2H • CS1G, CS1H, CS1D • CP2MC (RS 422)	–	–	–	• <sup>4)</sup>	• <sup>4)</sup>	–

- System interface possible
- System interface not possible

- <sup>1)</sup> Mobile Panel connection via special connecting cable and terminal box (see Mobile Panel), see Manual for cable layout.
- <sup>2)</sup> The controllers listed below can be combined in any way required; connection via RS422 interface of the controller or via RS422 module
- <sup>3)</sup> For Basic Panel, Touch Panel, Operator Panel, Comfort Panel, Multi Panel, the RS 422/RS 232 adapter 6AV6 671-8XE00-0AX0 is required
- <sup>4)</sup> Not Basic Panel PN, Mobile Panel 177 PN

#### Note:

For detailed information on pin assignment, refer to Online Help of WinCC; see also FAQs:

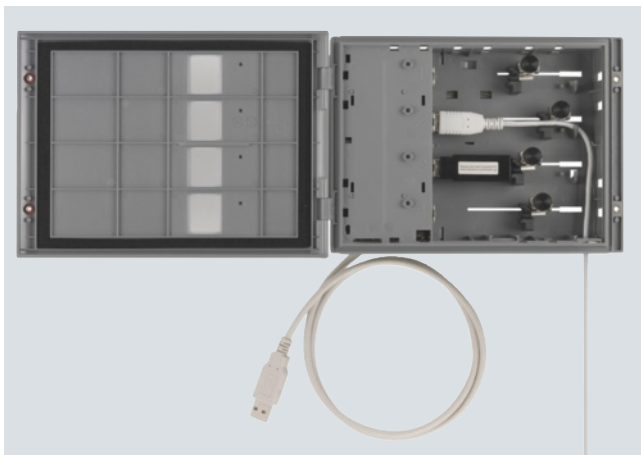
<http://support.automation.siemens.com/WW/view/en/29034071>

# Operator panels

## HMI Accessories

### Industrial USB Hub 4

#### Overview



Industrial USB Hub 4, open

- The Industrial USB Hub 4 is used as a USB hub for the connection of I/O devices to Multi Panels, Panel PCs and standard PCs.
- The industrial USB Hub 4 with IP65 degree of protection on the front (Service Kit required) can be mounted in a control cabinet. This simplifies the use of USB I/O in harsh industrial environments.
- USB I/O can be connected to the panel and operated via the Industrial USB Hub 4 without opening the cabinet door. The ports are also accessible from the rear even in the control cabinet.

#### Design

Use of the Industrial USB Hub 4

- permits the simultaneous connection of as many as four I/O devices such as USB stick, mouse, keyboard, printer or barcode reader to the panel.
- increases the availability of the system to be operated. The cabinet door no longer has to be opened in order to connect to the I/O. The unit can be operated from the Panel PC and the Multi Panel without interruption.

In addition, the Industrial USB Hub4 has the following features:

- Inspection window for each interface
- Vibration-proof restraint of connected USB cables and USB sticks
- One LED per interface for checking the data traffic
- Sufficient interior space for easy insertion and removal of connections
- Facility for attachment to a DIN rail
- Voltage connection for 24 V DC

#### Integration

The Industrial USB Hub 4 is suitable for connection to:

- Multi Panels
- SIMATIC IPC
- Standard PC

Recommended operating systems:

Windows CE/2000/XP/XP embedded

#### Technical specifications

<b>Product type designation</b>	<b>6AV6 671-3AH00-0AX0 Industrial USB Hub 4</b>
<b>Supply voltage</b>	
Supply voltage	24 V DC
permissible range	+20.4 V to +28.8 V DC
<b>Ambient conditions</b>	
max. relative humidity	90 %
Temperature	
• Operation (vertical installation)	0 °C to +50 °C
• Transport, storage	-20 °C to +60 °C
<b>Degree of protection</b>	
IP65 at front	Yes
IP20 rear	Yes
<b>Certifications &amp; standards</b>	
Certifications	CE
<b>Interfaces</b>	
Number of USB interfaces	4; 500 mA each, e.g. mouse, keyboard, printer, USB stick
<b>General information</b>	
belongs to product/product range	MP 277, Panel PC
<b>Dimensions</b>	
External dimensions (W x H x D) in mm	212 x 156 x 50
<b>Dimensions and weight</b>	
Weight	
• Weight	0.5 kg

#### Ordering data

#### Order No.

<b>Industrial USB Hub 4</b>	A	<b>6AV6 671-3AH00-0AX0</b>
4 x USB 2.0, IP65, for control cabinet door or standard rail, usable with MP 177/MP 277/MP 377, Panel PCs, HMI IPCs and standard PCs		
<b>Service pack for Industrial USB Hub 4</b>		see HMI accessories service packets (incl. IP65 expansion)

A: Subject to export regulations: AL: N and ECCN: EAR99H

#### More information

##### Note for SIMATIC Panel PCs

The Industrial USB Hub 4 is approved for the Windows CE/2000/XP operating systems. The appropriate drivers are supplied with the operating system software.

### Overview



Example - connecting cables

#### Key

**P** = PROCESS COUPLING

**K** = optional process coupling (option required)

**D** = DOWNLOAD (update operating system, project, ...)

**U** = booting (factory setting in the case of a missing or damaged operating system)

**MBP** = Mobile Panel

You can find order numbers for the connecting cables required to link SIMATIC Panels under selection and ordering data.

	S5-TTY (PG-S5)	S5-TTY (TD/OP-S5) (15/15-pole)	S7 PG702	RS232 external (15/9-pole)	TD-PPI (incl. voltage)	RS232 zero modem	RS232/PPI multi- master cable	USB/PPI multi- master cable	MPI (PG-S7) to 187.5 kbaud
	6ES5 734-2xxxx	6XV1 440-2Axxx	6ES7 705-0AA00-7BA0	6XV1 440-2Kxxx	6ES7 901-3EB10-0XA0	6ES7 901-1BF00-0XA0	6ES7 901-3CB30-0XA0	6ES7 901-3DB30-0XA0	6ES7 901-0BF00-0AA0
Key Panel KP8/KP8F	-	-	-	-	-	-	-	-	-
PP7	-	-	-	-	-	-	-	-	-
PP17 I	-	-	-	-	-	-	-	-	-
PP17-II	-	-	-	-	-	-	-	-	-
KTP400 mono PN	-	-	-	-	-	-	-	-	-
KTP600 mono PN	-	-	-	-	-	-	-	-	-
KTP600 color DP	-	-	-	-	-	-	D/U	D/U	P/D
KTP600 color PN	-	-	-	-	-	-	-	-	-
KTP1000 color DP	-	-	-	-	-	-	D/U	D/U	P/D
KTP1000 color PN	-	-	-	-	-	-	-	-	-
KTP1500 color PN	-	-	-	-	-	-	-	-	-
KTP400 Comfort	-	-	-	-	-	-	-	-	P/D
TP700 Comfort	-	-	-	-	-	-	-	-	P/D
TP900 Comfort	-	-	-	-	-	-	-	-	P/D
TP1200 Comfort	-	-	-	-	-	-	-	-	P/D
KP400 Comfort	-	-	-	-	-	-	-	-	P/D
KP700 Comfort	-	-	-	-	-	-	-	-	P/D
KP900 Comfort	-	-	-	-	-	-	-	-	P/D
KP1200 Comfort	-	-	-	-	-	-	-	-	P/D

# Operator panels

## HMI Accessories

### Connecting cables

#### Overview (continued)

	<b>S5-TTY (PG-S5)</b>	<b>S5-TTY (TD/OP- S5) (15/15- pole)</b>	<b>S7 PG702</b>	<b>RS232 external (15/9-pole)</b>	<b>TD-PPI (incl. voltage)</b>	<b>RS232 zero modem</b>	<b>RS232/PPI multi- master cable</b>	<b>USB/PPI multi- master cable</b>	<b>MPI (PG-S7) to 187.5 kbaud</b>
	6ES5 734- 2xxxx	6XV1 440- 2Axxx	6ES7 705- 0AA00- 7BA0	6XV1 440- 2Kxxx	6ES7 901- 3EB10- 0XA0	6ES7 901- 1BF00- 0XA0	6ES7 901- 3CB30-0XA0	6ES7 901- 3DB30-0XA0	6ES7 901- 0BF00- 0AA0
MBP 177	-	-	-	-	-	-	D/U	-	-
MBP 277	-	-	-	-	-	-	D/U	-	-
TD200	-	-	-	-	P	-	D/U	-	P
TD400C	-	-	-	-	P	-	D/U	-	P
OP73micro	-	-	-	-	P	-	D/U	D/U	P
TP177micro	-	-	-	-	-	-	D/U	D/U	-
OP73	-	-	-	-	P	-	D/U	D/U	P/D
OP77A	-	-	-	-	-	-	D/U	D/U	P/D
OP77B	-	-	-	P	-	D/U	-	-	P/D
TP177A	-	-	-	-	-	-	D/U	D/U	P/D
TP177B	-	-	-	P <sup>3)</sup>	-	-	D/U	-	P/D
TP177B 4"	-	-	-	P <sup>3)</sup>	-	D	D	-	P/D
OP177B	-	-	-	P <sup>3)</sup>	-	-	D/U	-	P/D
TP277-6	-	-	-	P <sup>3)</sup>	-	-	D/U	-	P/D
OP277-6	-	-	-	P <sup>3)</sup>	-	-	D/U	-	P/D
MP177-6 T	-	-	-	P <sup>3)</sup>	-	-	D/U	-	P/D
MP277-8 T	-	-	-	P <sup>3)</sup>	-	-	D/U	-	P/D
MP277-10 T	-	-	-	P <sup>3)</sup>	-	-	D/U	-	P/D
MP377-12 T	-	-	-	P <sup>3)</sup>	-	-	D	-	P/D
MP377-15 T	-	-	-	P <sup>3)</sup>	-	-	D	-	P/D
MP377-19 T	-	-	-	P <sup>3)</sup>	-	-	D	-	P/D



## Overview (continued)

	DP PtP	DP Standard	DP (Mobile Panel)	PN (cross cable) <sup>2)</sup> Point-to-point	PN (standard cable) <sup>2)</sup>	PN (Mobile Panel)	Conv. RS422-RS232	Conv. RS232-TTY (20 mA)	90° angular (9-pin 1:1)
	6XV1 830-0Axxx	Standard PROFIBUS (2-contact)	6XV1 440-4Axxx	6XV1 870-3RH20	Standard Ethernet CAT5	6XV1 440-4Bxxx	6AV6 671-8XE00-0AX0	6ES5 734-1BD20	6AV6 671-8XD00-0AX0
Key Panel KP8/KP8F	-	-	-	P/D	P/D	-	-	-	-
PP7	P	P	-	-	-	-	-	-	-
PP17 I	P	P	-	-	-	-	-	-	-
PP17-II	P	P	-	-	-	-	-	-	-
KTP400 mono PN	-	-	-	P/D/U	P/D/U	-	-	-	-
KTP600 mono PN	-	-	-	P/D/U	P/D/U	-	-	-	-
KTP600 color DP	P/D	P/D	-	-	-	-	-	-	P/D/U
KTP600 color PN	-	-	-	P/D/U	P/D/U	-	-	-	-
KTP1000 color DP	P/D	P/D	-	-	-	-	-	-	P/D/U
KTP1000 color PN	-	-	-	P/D/U	P/D/U	-	-	-	-
KTP1500 color PN	-	-	-	P/D/U	P/D/U	-	-	-	-
KTP400 Comfort	P/D	P/D	-	P/D/U	P/D/U	-	-	-	P/D/U
TP700 Comfort	P/D	P/D	-	P/D/U	P/D/U	-	-	-	P/D/U
TP900 Comfort	P/D	P/D	-	P/D/U	P/D/U	-	-	-	P/D/U
TP1200 Comfort	P/D	P/D	-	P/D/U	P/D/U	-	-	-	P/D/U
KP400 Comfort	P/D	P/D	-	P/D/U	P/D/U	-	-	-	P/D/U
KP700 Comfort	P/D	P/D	-	P/D/U	P/D/U	-	-	-	P/D/U
KP900 Comfort	P/D	P/D	-	P/D/U	P/D/U	-	-	-	P/D/U
KP1200 Comfort	P/D	P/D	-	P/D/U	P/D/U	-	-	-	P/D/U
MBP 177 DP	P/D	P/D	P/D	-	-	-	-	-	-
MBP 177 PN	-	-	-	-	-	P/D	-	-	-
MBP 277	P/D	P/D	P/D	-	-	P/D	-	-	-
TD200	-	-	-	-	-	-	-	-	-
TD400C	-	-	-	-	-	-	-	-	-
OP73micro	P	-	-	-	-	-	-	-	-
TP177micro	P	P	-	-	-	-	-	-	P/D/U
OP73	P	P	-	-	-	-	-	-	-
OP77A	P	P	-	-	-	-	-	-	P/D/U
OP77B	P/D	P/D	-	-	-	-	-	P	P/D/U
TP177A	P	P	-	-	-	-	-	-	P/D/U
TP177B DP	P/D	P/D	-	-	-	-	P	-	P/D/U
TP177B PN/DP	P/D	P/D	-	P/D	P/D	-	P	-	P/D/U
TP177B 4"	P/D	P/D	-	P/D/U	P/D/U	-	P	-	P/D/U
OP177B DP	P/D	P/D	-	-	-	-	P	-	P/D/U

# Operator panels

## HMI Accessories

### Connecting cables

#### Overview (continued)

	DP PtP	DP Standard	DP (Mobile Panel)	PN (cross cable) <sup>2)</sup> Point-to-point	PN (standard cable) <sup>2)</sup>	PN (Mobile Panel)	Conv. RS422-RS232	Conv. RS232-TTY (20 mA)	90° angular (9-pin 1:1)
	6XV1 830-0Axxx	Standard PROFIBUS (2-contact)	6XV1 440-4Axxx	6XV1 870-3RH20	Standard Ethernet CAT5	6XV1 440-4Bxxx	6AV6 671-8XE00-0AX0	6ES5 734-1BD20	6AV6 671-8XD00-0AX0
OP177B PN/DP	P/D	P/D	-	P/D	P/D	-	P	-	P/D/U
TP277-6	P/D	P/D	-	P/D	P/D	-	P	-	P/D/U
OP277-6	P/D	P/D	-	P/D	P/D	-	P	-	P/D/U
MP177-6 T	P/D	P/D	-	P/D	P/D	-	P	-	P/D/U
MP277-8 T	P/D	P/D	-	P/D	P/D	-	P	-	P/D/U
MP277-8 K	P/D	P/D	-	P/D	P/D	-	P	-	P/D/U
MP277-10 T	P/D	P/D	-	P/D	P/D	-	P	-	P/D/U
MP277-10 K	P/D	P/D	-	P/D	P/D	-	P	-	P/D/U
MP377-12 T	P/D	P/D	-	P/D/U	P/D/U	-	P	-	P/D
MP377-12 K	P/D	P/D	-	P/D/U	P/D/U	-	P	-	P/D
MP377-15 T	P/D	P/D	-	P/D/U	P/D/U	-	P	-	P/D
MP377-19 T	P/D	P/D	-	P/D/U	P/D/U	-	P	-	P/D

#### Note:

This table is for basic orientation only. Technical characteristics are described in the communication manual or in the respective user manual.

- <sup>1)</sup> With gender changer
- <sup>2)</sup> PROFINET IRT (Isochronous Runtime); isochronous mode only possible with IRT-enabled switch
- <sup>3)</sup> Only in conjunction with the RS422/RS232 converter

Ordering data	Order No.		Order No.
<b>Connecting cables 6ES7 901-0....</b>  for SIMATIC S7 MPI cable between SIMATIC S7 and programming device via MPI max. 187.5 kbaud  <u>Standard length</u> • 5.0 m <sup>1)</sup>	<b>6ES7 901-0BF00-0AA0</b>	<b>PROFIBUS connecting cable 830-1C</b>  For connection of data terminal, precut/preassembled with two sub D connectors, 9-pin, terminated at both ends  for PP, OP 73micro, TP 070, OP73, TP 170micro, TP 177micro, OP 77A/B, TP 170A, TP 177A, TP/OP 170B, TP/OP 177B, MP 270B  • 1.5 m • 3.0 m	<b>6XV1 830-1CH15</b> <b>6XV1 830-1CH30</b>
<b>Connecting cables 6ES7 901-1BF00-0XA0</b>  Between the HMI adapter and PC/TS adapter (RS 232 cable/ null-modem cable) for OP77B, TP177A/B, OP177B, TP/OP270, MP270, MP370  • 5.0 m	<b>6ES7 901-1BF00-0XA0</b>	<b>USB/PPI multi-master cable</b>  For connecting the S7-200 to the serial PC/OP interface	<b>6ES7 901-3DB30-0XA0</b>
<b>Connecting cables 6ES7 901-3....</b>  Process connecting cable  For connecting TD 100C or TD 200C to S7-200	<b>6ES7 901-3EB10-0XA0</b>	<b>PROFIBUS FC Standard Cable</b>  For connection to PPI; standard type with special design for quick mounting, 2-core, shielded, sold by the meter, max. delivery unit 1000 m, minimum ordering quantity 20 m	<b>6XV1 830-0EH10</b>
<b>Connecting cables 6XV1 440-2A...</b>  Connecting cable between TD/TP/OP and PLC S5-90U to S5-155U  max. 1,000.0 m <sup>2)</sup>	<b>6XV1 440-2A...</b>	<b>Industrial Ethernet TX XP Cord RJ45/RJ45</b>  Crossed TP cable 4 x 2, preassembled with 2 x RJ45 connectors  • 1.0 m • 6.0 m • 10.0 m	<b>6XV1 870-3RH10</b> <b>6XV1 870-3RH60</b> <b>6XV1 870-3RN10</b>

<sup>1)</sup> Included in PG scope of delivery

<sup>2)</sup> Other cable lengths (3.2 m, 5 m, 10 m, 20 m, 32 m and 50 m) see length key in Appendix.

### Note:

Cable pin assignments can be found on the Internet in the online help of WinCC flexible and under FAQs.

# Operator panels

## HMI Accessories

### RS485 bus connector

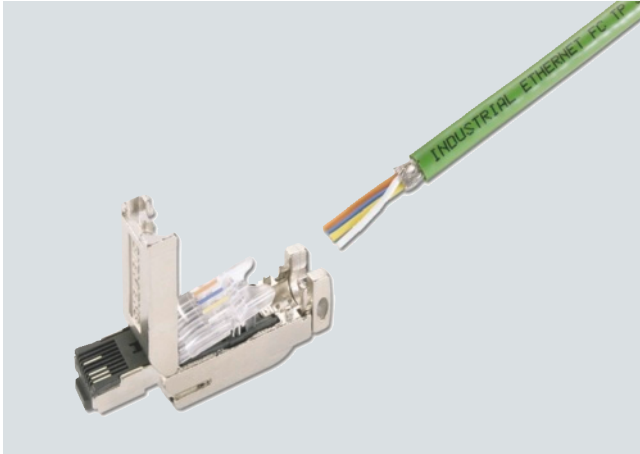
#### Overview



- Used for connecting PROFIBUS nodes to the PROFIBUS bus cable
- Easy installation
- FastConnect plugs ensure extremely short assembly times due to their insulation-displacement technology
- Integrated terminating resistors (not in the case of 6ES7 972-0BA30-0XA0)
- PG connection with special bus connector possible without additional installation of network nodes.

Ordering data	Order No.		Order No.
<b>RS485 bus connector with axial cable outlet (180°)</b> For industrial PC, SIMATIC HMI OP, OLM; max. transmission rate 12 Mbit/s	6GK1 500-0EA02	<b>RS485 bus connector with cable outlet (30°)</b> With screw-terminals, low-cost version, max. transmission rate 1.5 Mbit/s	6ES7 972-0BA30-0XA0
<b>SIPLUS DP PB RS485 connector with axial cable outlet (180°)</b> for extended temperature range -25 °C ... +60 °C and medial exposure; Based on 6GK1 500-0EA02	6AG1 500-0EA02-2AA0	<b>PROFIBUS bus connector RS485 with FastConnect technology</b> <b>PROFIBUS FastConnect bus connector RS485 with 90° cable outlet</b> with insulation displacement terminals, max. transmission rate 12 Mbit/s Without PG interface <ul style="list-style-type: none"> <li>• 1 unit</li> <li>• 100 units</li> </ul> With PG interface <ul style="list-style-type: none"> <li>• 1 unit</li> <li>• 100 units</li> </ul>	6ES7 972-0BA52-0XA0 6ES7 972-0BA52-0XB0 6ES7 972-0BB52-0XA0 6ES7 972-0BB52-0XB0
<b>RS485 bus connector with cable outlet (90°)</b> With screw-terminals, max. transmission rate 12 Mbit/s <ul style="list-style-type: none"> <li>• Without PG interface</li> <li>• With PG interface</li> </ul>	6ES7 972-0BA12-0XA0 6ES7 972-0BB12-0XA0	<b>PROFIBUS FastConnect RS485 bus connector with angled cable outlet (35°)</b> with insulation displacement terminals, max. transmission rate 12 Mbit/s <ul style="list-style-type: none"> <li>• Without PG interface</li> <li>• With PG interface</li> </ul>	6ES7 972-0BA60-0XA0 6ES7 972-0BB60-0XA0
<b>SIPLUS DP PB RS485 connector with 90° cable outlet</b> for extended temperature range -25 ... + 60 °C and medial exposure <ul style="list-style-type: none"> <li>• without PG interface Based on 6ES7 972-0BA12-0XA0</li> <li>• with PG interface Based on 6ES7 972-0BB12-0XA0</li> </ul>	6AG1 972-0BA12-2XA0 6AG1 972-0BB12-2XA0	<b>PROFIBUS FastConnect bus connector RS485 Plug 180</b> with insulation displacement terminals, with 180° cable outlet, for industrial PC, SIMATIC HMI OP, OLM; max. transmission rate 12 Mbit/s	6GK1 500-0FC10
<b>RS485 bus connector with angled cable outlet (35°)</b> With screw-terminals, max. transmission rate 12 Mbit/s <ul style="list-style-type: none"> <li>• Without PG interface</li> <li>• With PG interface</li> </ul>	6ES7 972-0BA42-0XA0 6ES7 972-0BB42-0XA0	<b>SIMATIC S5/S7 plug-in cable for PROFIBUS</b> Preassembled with two 9-pin sub-D connectors; max. transmission rate 12 Mbit/s; 3 m	6ES7 901-4BD00-0XA0
<b>SIPLUS DP PB RS485 connector with inclined cable outlet (35°)</b> for extended temperature range -25 ... + 60 °C and medial exposure <ul style="list-style-type: none"> <li>• without PG interface Based on 6ES7 972-0BA41-0XA0</li> <li>• with PG interface Based on 6ES7 972-0BB41-0XA0</li> </ul>	6AG1 972-0BA41-2XA0 6AG1 972-0BB41-2XA0		

### Overview



- Implementation of direct device connections over distances of up to 100 m with Industrial Ethernet FC installation cable 2 x 2 without patching
- Easy connection (insulation displacement contacts) for 4-core Twisted Pair installation cables (100 Mbit/s) without the need for special tools
- Error-preventing connection technique thanks to visible connection area as well as colored blade terminals
- Industry-compatible design (rugged metal housing, no easily lost small parts)
- Excellent EMC shielding and deflection (metal housing)
- Integrated strain-relief for installation cables
- Compatible to the EN 50173 (RJ45) / ISO IEC 11801 standard
- Additional strain and bending relief of plug connector possible through latching of plug on device housing, e.g. with SCALANCE X, SCALANCE S, ET 200S.

2

Ordering data	Order No.		Order No.
<b>IE FC RJ45 plugs</b> RJ45 plug connector for Industrial Ethernet with a rugged metal housing and integrated insulation displacement contacts for connecting Industrial Ethernet FC installation cables		<b>IE FC TP Standard Cable GP 2 x 2 (Type A)</b> 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug; PROFINET-compatible; with UL approval; Sold by the meter max. quantity 1,000 m; minimum order 20 m <u>Preferred length</u> • 1000 m	
<b>IE FC RJ45 Plug 180</b> 180° cable outlet; for network components and CPUs/CPUUs with Industrial Ethernet interface • 1 pack = 1 item • 1 pack = 10 items • 1 pack = 50 items	6GK1 901-1BB10-2AA0 6GK1 901-1BB10-2AB0 6GK1 901-1BB10-2AE0		6XV1 840-2AH10  6XV1 840-2AU10
<b>IE FC RJ45 Plug 90</b> 90° cable outlet; e.g. for ET 200S • 1 pack = 1 item • 1 pack = 10 items • 1 pack = 50 items	6GK1 901-1BB20-2AA0 6GK1 901-1BB20-2AB0 6GK1 901-1BB20-2AE0	<b>IE FC TP Flexible Cable GP 2 x 2 (Type B)</b> 4-core, shielded TP installation cable for connection to IE FC Outlet RJ45/ IE FC RJ45 Plug for occasional movement; PROFINET-compatible; with UL approval; sold by the meter; max. quantity 1000 m, minimum order 20 m	6XV1 870-2B
<b>IE FC RJ45 Plug 145</b> 145° cable outlet; e.g. for SIMOTION and SINAMICS • 1 pack = 1 item • 1 pack = 10 items • 1 pack = 50 items	6GK1 901-1BB30-0AA0 6GK1 901-1BB30-0AB0 6GK1 901-1BB30-0AE0		

# Operator panels

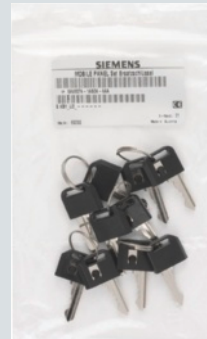
## HMI Accessories

### Accessories for SIMATIC Mobile Panels

#### Overview



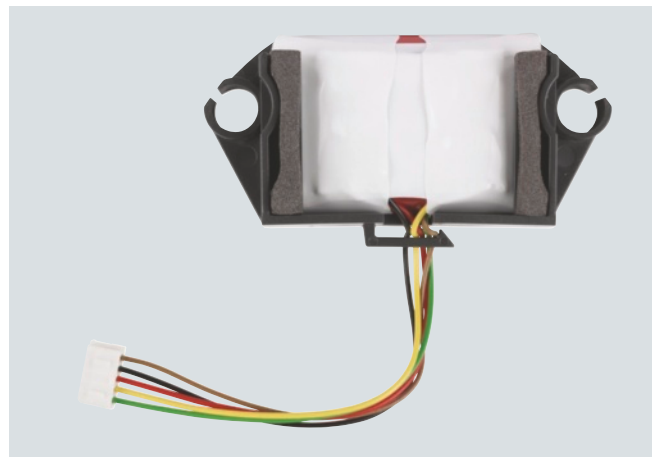
Connecting cable DP (PROFIBUS) for Mobile Panels



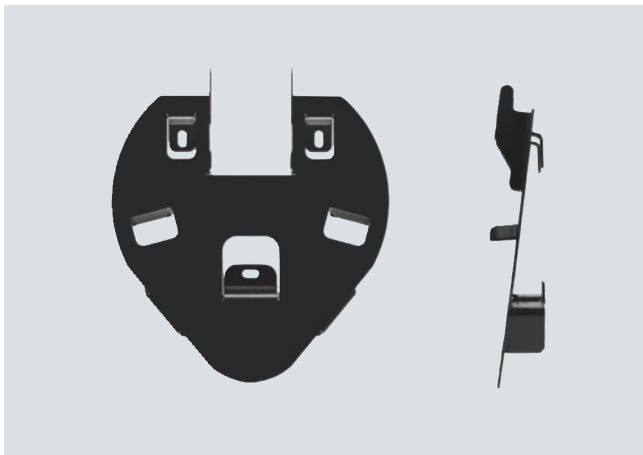
Replacement key for Mobile Panel



Connecting cable PN (PROFINET) for Mobile Panels



Option package: Battery for Mobile Panels



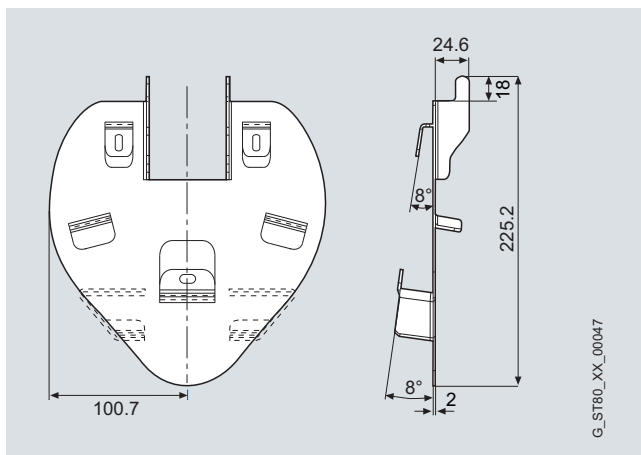
Device for wall fastening for Mobile Panel, front and side view

Ordering data	Order No.	Order No.
<b>Connecting cable DP (MPI/PROFIBUS) for Mobile Panels</b> Standard lengths <ul style="list-style-type: none"> <li>• 2 m</li> <li>• 5 m</li> <li>• 8 m</li> <li>• 10 m</li> <li>• 15 m</li> <li>• 20 m</li> <li>• 25 m</li> </ul>	<b>6XV1 440-4AH20</b> <b>6XV1 440-4AH50</b> <b>6XV1 440-4AH80</b> <b>6XV1 440-4AN10</b> <b>6XV1 440-4AN15</b> <b>6XV1 440-4AN20</b> <b>6XV1 440-4AN25</b>	<b>Labeling strips for keys</b> Pack for labeling 6 devices (2 sheets of 3 sets) incl. spare labels for cover caps <b>6AV6 671-5BF00-0AX0</b>
<b>Connecting cable PN (PROFINET) for Mobile Panels</b> Standard lengths <ul style="list-style-type: none"> <li>• 2 m</li> <li>• 5 m</li> <li>• 8 m</li> <li>• 10 m</li> <li>• 15 m</li> <li>• 20 m</li> <li>• 25 m</li> </ul>	<b>6XV1 440-4BH20</b> <b>6XV1 440-4BH50</b> <b>6XV1 440-4BH80</b> <b>6XV1 440-4BN10</b> <b>6XV1 440-4BN15</b> <b>6XV1 440-4BN20</b> <b>6XV1 440-4BN25</b>	<b>Spare key for Mobile Panels</b> (pack of 10 keys) <b>6AV6 574-1AG04-4AA0</b>
<b>Accumulator option pack for Mobile Panels (DP and PN)</b>	<b>6AV6 671-5AD00-0AX0</b>	<b>Service pack for Mobile Panels 177/277</b> Consisting of: <ul style="list-style-type: none"> <li>• Blanking plugs for cable duct</li> <li>• 2 x cable glands for connectivity box</li> <li>• 1 set of screws for connectivity box cover</li> <li>• 2 x terminal box (12-pin)</li> <li>• 1 x terminal box (3-pin)</li> <li>• 1 x blanking cap for terminal box</li> </ul> <b>6AV6 574-1AA04-4AA0</b>
<b>Wall mounting bracket for Mobile Panels</b>	<b>6AV6 574-1AF04-4AA0</b>	<b>Service pack for Mobile Panels 277(F) IWLAN</b> A Consisting of: <ul style="list-style-type: none"> <li>• 1 x Mobile Panel 277 accessories pack (labeling strip cover)</li> <li>• 1 x battery slot cover (device)</li> <li>• 1 x backup battery</li> <li>• 1 x left/right cover (charging station)</li> <li>• 1 x power supply mating connector (charging station)</li> <li>• 1 x spare key (charging station)</li> </ul> <b>6AV6 671-5CA00-0AX2</b>
<b>Memory card Multi Media Card, 128 MB</b>	<b>6AV6 671-1CB00-0AX2</b>	<b>Extra battery</b> for Mobile Panel 277(F) IWLAN <b>6AV6 671-5CL00-0AX0</b>
<b>Touch pen</b> A including nylon line for securing it to the Mobile Panel 277 10" (set of 5, packed ready for shipping)	<b>6AV6 645-7AB14-0AS0</b>	

A: Subject to export regulations: AL: N and ECCN: EAR99H

### Dimensional drawings

All specifications in mm. Panel cutout see technical specifications.



SIMATIC Mobile Panel wall-mounting bracket

# Operator panels

## HMI Accessories

### Terminal boxes

#### Overview



#### Technical specifications

	6AV6 671-5AE00-0AX0	6AV6 671-5AE10-0AX0	6AV6 671-5AE01-0AX0	6AV6 671-5AE11-0AX0
<b>Product type designation</b>	Terminal box DP for Mobile Panels 177/277 (MPI/PROFIBUS) Basic	Terminal box DP for Mobile Panels 177/277 (MPI/PROFIBUS) Plus	Terminal box PN for Mobile Panels 177/277 (MPI/PROFINET) Basic	Terminal box PN for Mobile Panels 177/277 (MPI/PROFINET) Plus
<b>Expansions for operator control of the process</b>				
Hot swapping	with emergency stop circuit interruption	without emergency stop circuit interruption	with emergency stop circuit interruption	without emergency stop circuit interruption
• Monitoring the STOP button	No	Yes	No	Yes
• Location identifier	Yes	Yes	Yes	Yes
<b>Supply voltage</b>				
Via battery				
• permissible range	+20.4 V to +28.8 V DC	+20.4 V to +28.8 V DC	+20.4 V to +28.8 V DC	+20.4 V to +28.8 V DC
• Supply voltage	24 V DC	24 V DC	24 V DC	24 V DC
Rated current	0.4 A	0.5 A	0.4 A	0.5 A
Power	10 W	12 W	10 W	12 W
<b>Interfaces</b>				
Interfaces	1 x RS232, 1 x RS422, 1 x RS485 (max. 12 Mbit/s)	1 x RS232, 1 x RS422, 1 x RS485 (max. 12 Mbit/s)	2 x Ethernet (RJ45)	2 x Ethernet (RJ45)
<b>Ambient conditions</b>				
• Operation (vertical installation)	0 °C to +50 °C	0 °C to +50 °C	0 °C to +50 °C	0 °C to +50 °C
• Transport, storage	-20 °C to +70 °C	-20 °C to +70 °C	-20 °C to +70 °C	-20 °C to +70 °C
• max. relative humidity	85 %	85 %	85 %	85 %
Enclosure according to EN 60529	IP65	IP65	IP65	IP65
Certifications	CE, cULus, C-TICK	CE, cULus, C-TICK	CE, cULus, C-TICK	CE, cULus, C-TICK
<b>Functionality under WinCC flexible/WinCC (TIA Portal)</b>				
Applications/options				
• Connection point identification	Yes	Yes	Yes	Yes
<b>Dimensions and weight</b>				
Dimensions				
• External dimensions (W x H x D) in mm	160 x 120 x 70	160 x 120 x 70	230 x 120 x 80	230 x 120 x 80
Weight				
• Weight	0.35 kg	0.4 kg	0.45 kg	0.5 kg

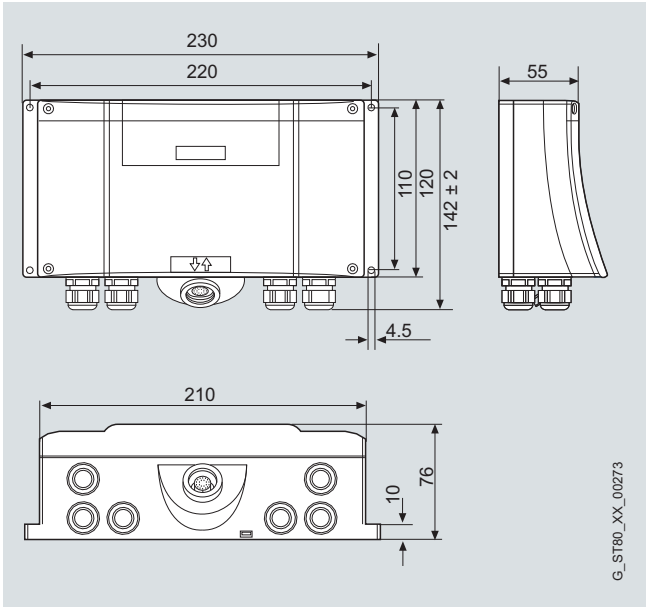
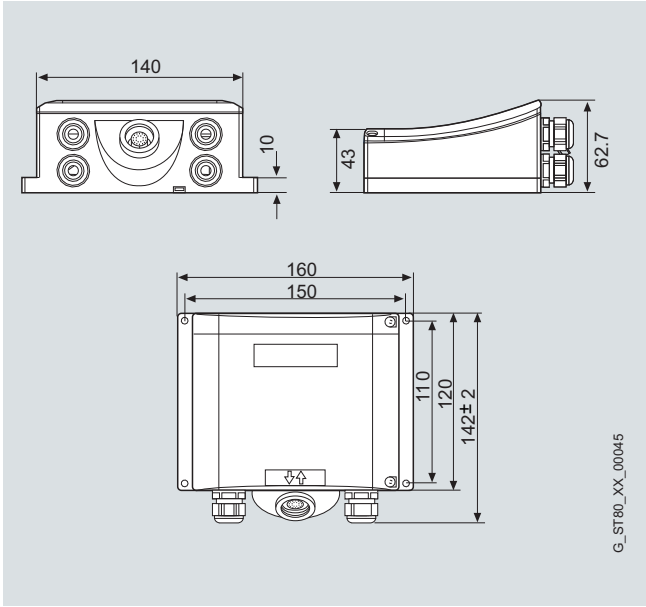


Ordering data	Order No.
<b>DP terminal box for Mobile Panels 177/277 (MPI/PROFIBUS)</b> <ul style="list-style-type: none"><li>• Basic</li><li>• Plus</li></ul>	<div>A</div> <div>6AV6 671-5AE00-0AX0</div> <div>6AV6 671-5AE10-0AX0</div>
<b>PN terminal box for Mobile Panels 177/277 (PROFINET)</b> <ul style="list-style-type: none"><li>• Basic</li><li>• Plus</li></ul>	<div>A</div> <div>6AV6 671-5AE01-0AX0</div> <div>6AV6 671-5AE11-0AX0</div>

A: Subject to export regulations: AL: N and ECCN: EAR99H

Dimensional drawings

All specifications in mm. Panel cutout see technical specifications.



# Operator panels

## HMI Accessories

### SIPLUS terminal boxes

#### Overview



#### Note:

SIPLUS extreme products are based on Siemens Industry standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

SIPLUS terminal box DP Plus	
<b>Order No.</b>	<b>6AG1 671-5AE10-4AX0</b>
<b>Order No. based on</b>	<b>6AV6 671-5AE10-0AX0</b>
Ambient temperature range	0 ... +50 °C
Conformal coating	Coating of the printed circuit boards and the electronic components
Technical specifications	The technical data of the standard product applies except for the ambient conditions.

#### Ambient conditions

Relative humidity	5 ... 100 % Condensation permissible
Air pressure (depending on the highest positive temperature range specified)	1080 ... 795 hPa (-1000 ... +2000m) see ambient temperature range 795 ... 658 hPa (+2000 ... +3500m) derating 10 K 658 ... 540 hPa (+3500 ... +5000m) derating 20 K

Ordering data	Order No.
<b>SIPLUS terminal box DP Plus for Mobile Panels 177/277 (MPI/PROFIBUS)</b>	<b>6AG1 671-5AE10-4AX0</b>

A: Subject to export regulations: AL: N and ECCN: EAR99H

### Overview



### Technical specifications

6AV6 671-5CE00-0AX1	
<b>Supply voltage</b>	
Via battery	
• permissible range	+19.2 V to +28.8 V DC
• Supply voltage	24 V DC
Rated current	3.2 A
Power	77 W
<b>Ambient conditions</b>	
• Operation (vertical installation)	0 °C to +40 °C
• Transport, storage	-20 °C to +60 °C
• max. relative humidity	85 %
IP65 at front	Yes
IP65 rear	Yes
Enclosure according to EN 60529	IP65
Certifications	CE, cULus, C-TICK
<b>Dimensions and weight</b>	
Dimensions	
• External dimensions (W x H x D) in mm	208 x 333 x 75
Weight	
• Weight	1.1 kg

### Ordering data

### Order No.

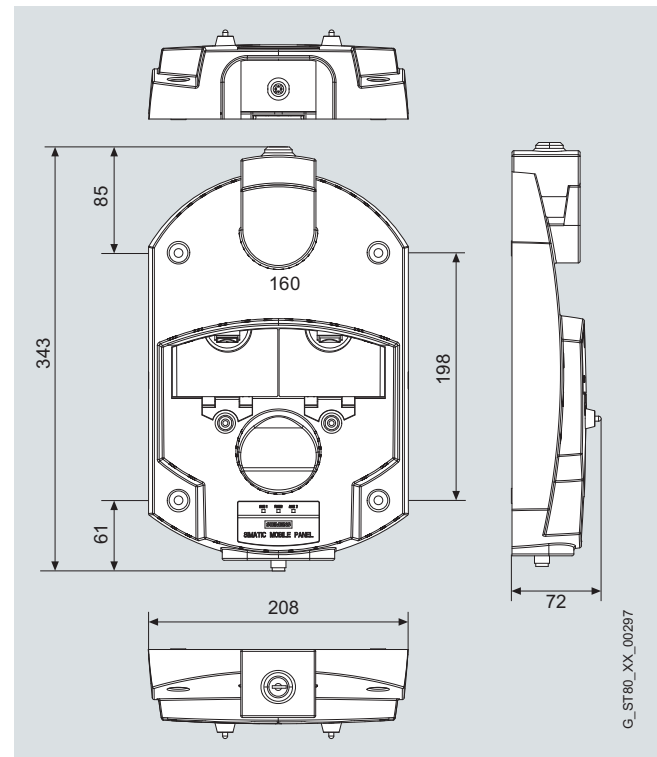
#### Charging station for Mobile Panels

A **6AV6 671-5CE00-0AX1**

A: Subject to export regulations: AL: N and ECCN: EAR99H

### Dimensional drawings

All specifications in mm. Panel cutout see technical specifications.



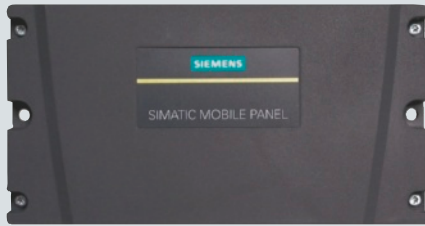
Charging station

# Operator panels

## HMI Accessories

### Transponder

#### Overview



#### Ordering data

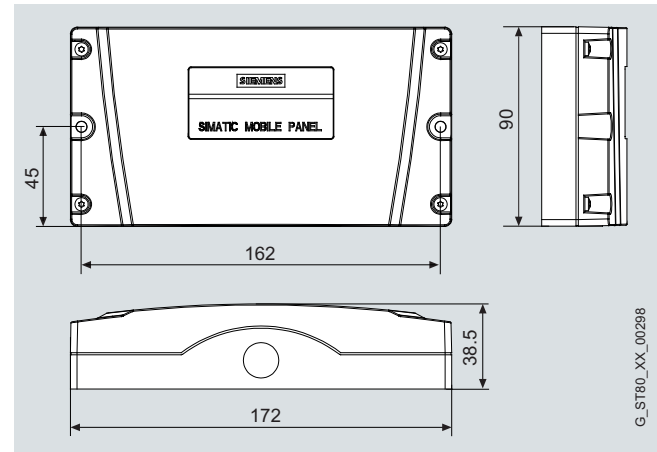
#### Order No.

Transponder for  
Mobile Panels 277

6AV6 671-5CM00-0AX1

#### Dimensional drawings

All specifications in mm. Panel cutout see technical specifications.



Transponder

#### Technical specifications

6AV6 671-5CM00-0AX1	
<b>Supply voltage</b>	
Via battery	Yes
• Number of batteries	3
• Battery type	Type AA
- Type AA	Yes
• Lifetime of battery, typ.	5 a
<b>Transponder</b>	
Transmit frequency	2.4 GHz; Passive, frequency range: 2400 to 2483.5 MHz
Range of transmitter	8 m
Transmission angle	93°
Number of adjustable identifiers, max.	65 534; Not in °
<b>Ambient conditions</b>	
• Operation (vertical installation)	0 °C to +50 °C
• Transport, storage	-20 °C to +60 °C
• max. relative humidity	85 %
IP65 at front	Yes
NEMA	4x / 12
IP65 rear	Yes
Enclosure according to EN 60529	IP65
Enclosure according to NEMA	NEMA 4x, NEMA 12
Certifications	CE, cULus, C-TICK, NEMA 4x, NEMA 12
<b>Functionality under WinCC flexible/WinCC (TIA Portal)</b>	
Applications/options	
• Zones	Yes
• Effective range	Yes
<b>Dimensions and weight</b>	
Dimensions	
• External dimensions (W x H x D) in mm	172 x 90 x 38.5
Weight	
• Weight	0.3 kg

G\_ST80\_XX\_00298

Overview



USB 2.0 flash drive

Ordering data		Order No.
<b>Multimedia card, 128 MB</b> for Mobile Panel 177/277, OP 77B, TP/OP 177B, TP/OP 277 and MP 177/277/377	A	<b>6AV6 671-1CB00-0AX2</b>
<b>SD Card, 512 MB</b> for Mobile Panel 277, MP 177, MP 277, MP 377 and WinCC flexible 2008 SP1 and higher for OP 77, TP/OP 177/277, MP 177, with SD/MMC slot	A	<b>6AV6 671-8XB10-0AX1</b>
<b>SD card, 2 GB</b> for Comfort Panels	A	<b>6AV2 181-8XP00-0AX0</b>
<b>SIMATIC IPC USB FlashDrive</b> 8 GB, USB 2.0, metal enclosure, bootable	A	<b>6ES7 648-0DC50-0AA0</b>

A: Subject to export regulations: AL: N and ECCN: EAR99H

# Operator panels

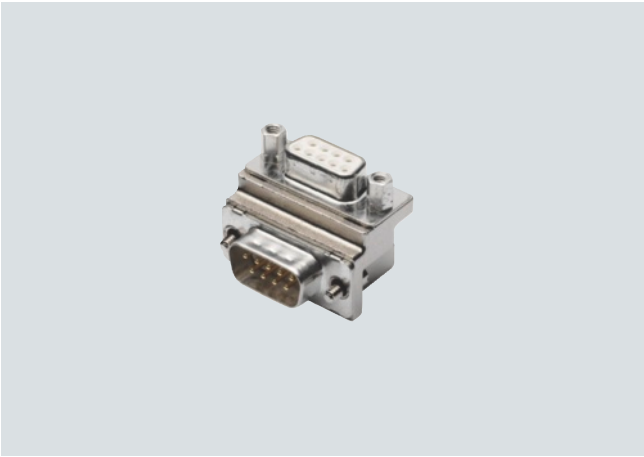
## HMI Accessories

### Converters/adapters

#### Overview



RS422 to RS232 converter, 9-pin



90° angle adapter, 9-pin 1:1

#### Ordering data

#### Order No.

##### Converters/adapters

##### RS422 to RS232 converter, 9-pin pin - pin

between Panel and non-Siemens PLC with RS232 interface, for TP 177B, OP 177B, TP/OP 277-6, MP 277-8T/K, MP 277-10T/K

A

6AV6 671-8XE00-0AX0

##### RS422 / TTY converter

9-pin / 15-pin for RS 422 interface, pin-socket, 180 degree cable outlet for SIMATIC S5 connection

A

6AV6 671-8XJ00-0AX0

##### 90° angle adapter

9-pin 1:1 pin (on panel) - socket, between TD/OP and plug-in cable

6AV6 671-8XD00-0AX0

A: Subject to export regulations: AL: N and ECCN: EAR99H

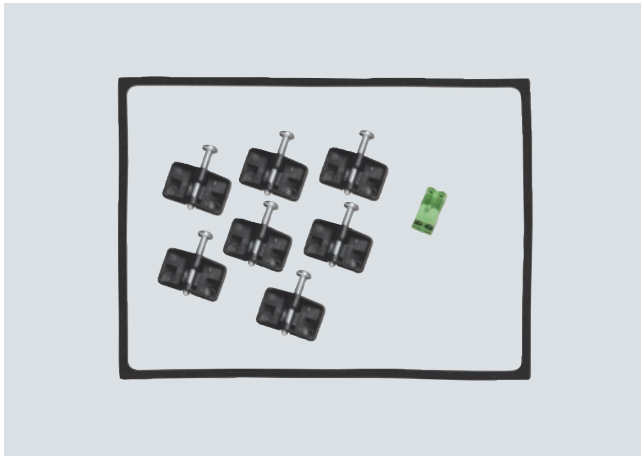
**Overview**

The service packs listed below are available:

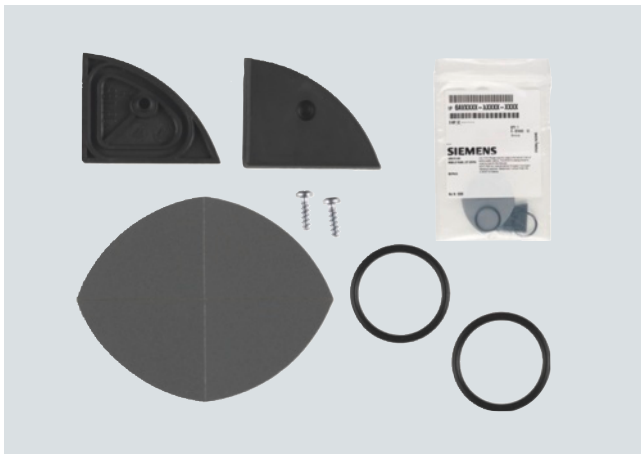
- PP7, PP17
- TD 17, OP 7, OP 17
- OP 73micro, OP 73, OP 77A, OP 77B
- TP 170micro, TP 070, TP 170A/B, OP 170B, TP/OP 270 6", TP/OP 277 6", MP 177 6" Touch, MP 270B 6" Touch
- TP 177micro, TP 177A, TP/OP 177B
- Mobile Panels 177/277
- Mobile Panels 277(F) IWLAN
- OP 270 10", MP 270B 10" Key
- TP 270 10", MP 270B 10" Touch, MP 370 12" Touch, C7-636 Touch, MP 370 15" Touch
- MP 277 8" Touch, MP 277 8" Key, MP 277 10" Touch, MP 277 10" Key
- MP 277 INOX 10" Touch
- MP 370 12" Key, MP 377 12" Key
- MP 377 INOX 15" Touch
- MP 377 12" Touch, MP 377 15" Touch, MP 377 19" Touch
- Industrial USB Hub 4

The following are also available:

- 24 V DC power supply connector set
- Touch pen with device for wall mounting



Examples: Service pack for Mobile Panel



Service pack for Mobile Panel

**Ordering data****Order No.****Service pack for PP7, PP17**

**6AV3 678-3XC30**

Consisting of:

- 1 x PP7 gasket
- 1 x PP17-I/PP17-II gasket
- 5 x mounting clamps
- 1 x 24 V PP7 plug-in terminal strip (2-pin)
- 1 x 24 V PP17-I/PP17-II plug-in terminal strip (3-pin)

**Service pack for OP 73micro, OP 73, OP 77A, OP 77B**

**6AV6 671-1XA00-0AX0**

Consisting of:

- 1 x OP 73micro, OP 73 mounting seal
- 1 x OP 77A, OP 77B mounting seal
- 4 x mounting clamps
- 1 x 24 V plug-in terminal strip (2-pin)

**Service pack for TP 170micro, TP070, TP 170A/B, OP 170B, TP/OP 270 6", TP/OP 277 6", MP 177 6" Touch, MP 270B 6" Touch**

**6AV6 574-1AA00-4AX0**

Consisting of:

- 1 x TP 170micro, TP070, TP 170A/B, TP 270 6", TP 277 6", MP 177 6" Touch mounting seal
- 1 x OP 170B mounting seal
- 1 x OP 270 6", OP 277 6" mounting seal
- 1 x set of labeling strips for OP 170B
- 1 x set of labeling strips for OP 270 6", OP 277 6"
- 7 x mounting clamps
- 1 x 24 V plug-in terminal strip (2-pin)

**Service pack for TP 177micro, TP 177A, TP 177B, OP 177B**

**6AV6 671-2XA00-0AX0**

Consisting of:

- 1 x TP 177micro, TP 177A, TP 177B mounting seal
- 1 x OP 177B mounting seal
- 7 x mounting clamps
- 1 x 24 V plug-in terminal strip (2-pin)

# Operator panels

## HMI Accessories

### Service packs

2

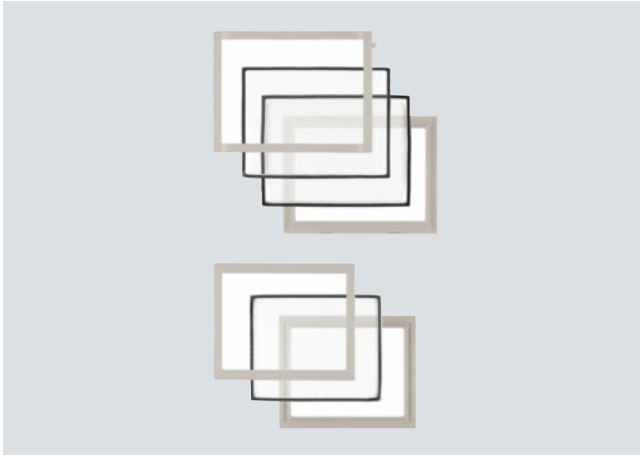
Ordering data	Order No.	Order No.	
<b>Service pack for MP 277 8", E14 and higher <sup>1)</sup> and MP 277 10" Touch, E14 and higher <sup>1)</sup></b>  Consisting of: <ul style="list-style-type: none"><li>• 1 x MP 277 8" Touch mounting seal, E14 and higher <sup>1)</sup></li><li>• 1 x MP 277 8" Key mounting seal, E14 and higher <sup>1)</sup></li><li>• 1 x MP 277 10" Touch mounting seal, E14 and higher <sup>1)</sup></li><li>• 10 x spring mounting clamps</li><li>• 1 x 24 V plug-in terminal strip (2-pin)</li><li>• 1 x Allen key</li></ul>	<b>6AV6 671-3XA01-0AX1</b>	<b>Service pack for Mobile Panels 177/277</b>  Consisting of: <ul style="list-style-type: none"><li>• Blanking plugs for cable duct</li><li>• 2 x cable glands for connectivity box</li><li>• 1 set of screws for connectivity box cover</li><li>• 2 x terminal box (12-pin)</li><li>• 1 x terminal box (3-pin)</li><li>• 1 x blanking cap for connectivity box</li></ul>	<b>6AV6 574-1AA04-4AA0</b>
<b>Service pack for MP 277 INOX 10" Touch</b> A  Consisting of: <ul style="list-style-type: none"><li>• 1 x mounting seal</li><li>• 10 x mounting clamps</li><li>• 1 x 24 V plug-in terminal strip (2-pin)</li><li>• 1 x Allen key</li></ul>	<b>6AV6 675-3AA00-0AX0</b>	<b>Service pack for Mobile Panels 277(F) IWLAN</b> A  Consisting of: <ul style="list-style-type: none"><li>• 1 x battery slot cover (device)</li><li>• 1 x left/right cover (charging station)</li><li>• 1 x 24 V DC power supply mating connector (charging station)</li><li>• 1 x spare key (charging station)</li></ul>	<b>6AV6 671-5CA00-0AX2</b>
<b>Service pack for MP 370/MP 377 12" Key</b>  Consisting of: <ul style="list-style-type: none"><li>• 2 x sets of labeling strips for OPs</li><li>• 6 x mounting clamps</li><li>• 1 x mounting bracket for CF memory card</li><li>• 1 x mounting bracket for PC memory card</li><li>• 1 x 24 V DC plug-in terminal strip (2-pin)</li><li>• 1 x Allen key</li></ul>	<b>6AV6 574-1AA00-2BX0</b>	<b>Service pack for Industrial USB Hub 4</b>  Consisting of: <ul style="list-style-type: none"><li>• 1 x mounting seal</li><li>• 1 x rear metal frame (for achieving IP65 with mounting plates that are less than 3 mm thick)</li><li>• 5 x mounting clamps</li><li>• 1 x 24 V plug-in terminal strip (2-pin)</li></ul>	<b>6AV6 671-3EA01-0AX0</b>
<b>Service pack for MP 377 12" Touch, MP 377 15" Touch, MP 377 19" Touch</b> A  Consisting of: <ul style="list-style-type: none"><li>• 1 x MP 377 12" Touch mounting seal</li><li>• 1 x MP 377 12" Key mounting seal</li><li>• 1 x MP 377 15" Touch mounting seal</li><li>• 1 x MP 377 19" Touch mounting seal</li><li>• 18 x mounting clamps</li><li>• 1 x 24 V DC plug-in terminal strip (2-pin)</li><li>• 1 x Allen key</li></ul>	<b>6AV6 671-4XA00-0AX0</b>	<b>Power supply connector set</b> A  Consisting of: <ul style="list-style-type: none"><li>• 10 x 24 V DC power supply connectors (2-pin)</li></ul>	<b>6AV6 671-8XA00-0AX0</b>
		<b>Touch pen with device for wall mounting</b>  Touch pen suitable for all touch panels and touch displays, incl. wall holder for screwing in place	<b>6AV7 672-1JB00-0AA0</b>

A: Subject to export regulations: AL: N and ECCN: EAR99H

<sup>1)</sup> E14 = Product version 14



## Overview



Protective covers with IP65 degree of protection provide complete frontal protection of the panel against dirt and scratches; the protective covers can be kept clean using high-pressure cleaning equipment. Own frame designs can be created and printed out at low cost (ready-made Word templates can be downloaded) between panel and protective cover.

For simple display protection, adhesive protective foils are available.

The following protective covers are available:

- TP 070, TP 170micro, TP 177micro, TP 170A/B, TP 177A/B, TP 270 6", TP 277 6", MP 177 6" Touch, MP 270B 6" Touch
- OP 77 A/B
- OP 177B
- MP 277 8" Touch
- MP 277 10" Touch, Thin Client 10"

## Ordering data

## Order No.

**Protective covers for TP 070, TP 170micro, TP 177micro, TP 170A/B, TP 177A/B, TP 270 6", TP 277 6" MP 177 6" Touch, MP 270 6" Touch**

(2 sets per pack)

Consisting of:

- 2 cover frames
- 2 base frames
- 2 protective covers, molded (for TP 070, TP 170micro, TP 170A/B)
- 2 protective covers smooth (for TP 177micro, TP 177A/B, TP 270 6", MP 177 6" Touch, MP 270 6" Touch)

**6AV6 574-1AE00-4AX0**

**Protective covers for OP 77A/B**

(2 sets per pack)

Consisting of:

- 2 cover frames
- 2 base frames
- 2 protective covers

**6AV6 671-1AJ00-0AX0**

**Protective covers for OP 177B**

(2 sets per pack)

Consisting of:

- 2 cover frames
- 2 base frames
- 2 protective covers

**6AV6 671-2DJ00-0AX0**

**Protective covers for MP 277 8" Touch**

(2 sets per pack) for

MP 277 8" Touch  
6AV6 643-0CB01-1AX1 up to E05 <sup>1)</sup> and  
6AV6 643-0CB01-1AX5 E05 <sup>1)</sup> and higher

Consisting of:

- 2 cover frames
- 2 base frames
- 2 protective covers

**6AV6 671-3CK01-0AX0**

**Protective covers for MP 277 10" Touch, Thin Client 10"**

(2 sets per pack) for

MP 277 10" Touch  
6AV6 643-0CD01-1AX1 up to E06 <sup>2)</sup> and  
6AV6 643-0CD01-1AX5 E06 <sup>2)</sup> and higher, as well as  
Thin Client 10" for  
6AV6 646-0AA21-2AX0 up to E03 <sup>3)</sup>

Consisting of:

- 2 cover frames
- 2 base frames
- 2 protective covers

**6AV6 671-3CK00-0AX0**

<sup>1)</sup> E05 = Product version 05

<sup>2)</sup> E06 = Product version 06

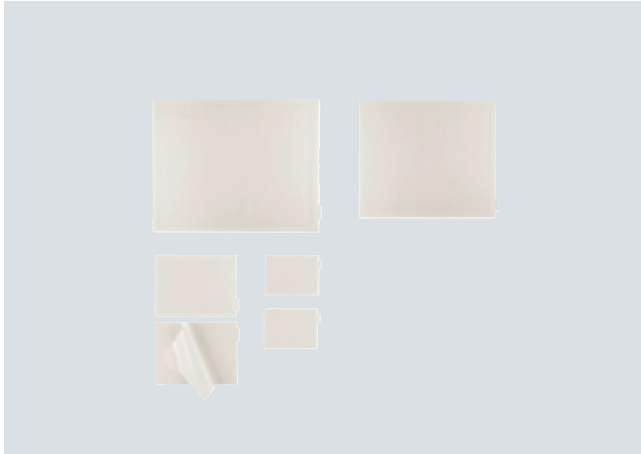
<sup>3)</sup> E03 = Product version 03

# Operator panels

## HMI Accessories

### Cover foils

#### Overview



Protective pockets for:

- Labeling strips for Mobile Panel 170 and Mobile Panel 177

Key labeling strips for:

- Mobile Panel 277
- MP 370 12" Key / MP 377 12" Key

Protective foils serve to protect the display from dirt and scratching during use. The labeling strips, blank foils, and protective foils should be printed at a printing works. Ready-made Word templates can be used to create labeling strips for SIMATIC HMI touch devices.

For complete protection of the front side, protective covers are available.

Cover foils for:

- Basic Panels 4" to 15"
- Comfort Panels touch devices (TP and KTP)
- TD 200C
- TD 400C
- TP 070, TP 170micro, TP 170A/B, C7-635 Touch
- TP 177micro, TP 177A/B, OP 177B
- KTP400, TP 177B 4"
- Mobile Panel 177
- Mobile Panel 277 8", Mobile Panel 277 10"
- TP 270 6", TP 277 6", MP 177 6" Touch, MP 270B 6" Touch, C7-635 Touch
- TP 270 10", MP 270B 10", MP 370 12" Touch, MP 377 12" Touch, C7-636 Touch
- MP 277 8" and 10", Thin Client 10"
- MP 370 15" Touch, MP 377 15" Touch, Thin Client 15"
- MP 377 19" Touch

Ordering data	Order No.		Order No.	
<b>Cover foils for HMI KTP400 Comfort</b>  (pack of 10 each)	6AV2 124-6DJ00-0AX0		<b>Cover foils for TP 270 10", MP 270B 10", MP 370 12" Touch, MP 377 12" Touch, C7-636 Touch</b>  (pack of 10 each)	6AV6 574-1AD00-4CX0
<b>Cover foils for HMI TP700 Comfort</b>  (pack of 10 each)	6AV2 124-6GJ00-0AX0		<b>Cover foils for MP 277 8" MP 277 8" Touch/Key up to E14 <sup>1)</sup></b>  (pack of 10 each)	6AV6 671-3CC00-0AX0
<b>Cover foils for HMI TP900 Comfort</b>  (pack of 10 each)	6AV2 124-6JJ00-0AX0		<b>Cover foils for MP 277 8" (6AV6 643-0CB01-1AX1), ES15 or higher (ES = product version)</b>  (pack of 10 each)	6AV6 671-3CC00-0AX5
<b>Cover foils for HMI TP1200 Comfort</b>  (pack of 10 each)	6AV2 124-6MJ00-0AX0		<b>Cover foils for MP 277 10" Touch, Thin Client 10" for 6AV6 646-0AA21-2AX0, MP 277 10" Touch up to E14 <sup>1)</sup></b>  (pack of 10 each)	6AV6 671-3DC00-0AX0
<b>Blank foils for TD 200C</b> A for customer-specific keyboard layouts; 3 perforated films per sheet (10 sheets per pack)	6ES7 272-1AF00-7AA0		<b>Cover foils for MP 277 10" Touch, MP 377 12" and Thin Client 10" Touch (6AV6 643-0CD01-1AX1), ES15 <sup>2)</sup> or higher, HMI KTP1000 Basic</b>  (pack of 10 each)	6AV6 671-3DC00-0AX5
<b>Blank foils for TD 400C</b> for customer-specific keyboard layouts; 3 perforated films per sheet (10 sheets per pack)	6AV6 671-0AP00-0AX0		<b>Cover foils for MP 370 15" Touch, MP 377 15" Touch, Thin Client 15", HMI TP1500 Basic</b>  (pack of 10 each)	6AV6 574-1AD00-4EX0
<b>Cover foils for TP 070, TP 170micro, TP 170A/B, C7-635 Touch</b>  (pack of 10 each)	6AV6 574-1AD00-4AX0		<b>Cover foils for MP 377, 19" Touch</b>  (pack of 10 each)	6AV7 672-1CE00-0AA0
<b>Cover foils for TP 177micro, TP 177A, TP 177B</b>	6AV6 671-2XC00-0AX0		<b>Protective pockets for labeling strips for Mobile Panel 170 and Mobile Panel 177</b>  (5 units per pack) for labeling strips for Mobile Panel 177 and 277	6AV6 574-1AB04-4AA0
<b>Cover foils for HMI KTP400 Basic, TP 177B 4"</b>  (pack of 10 each)	6AV6 671-2EC00-0AX0		<b>Key labeling strips for Mobile Panel 277</b>  Packet for labeling 6 devices (2 sheets per pack), incl. spare stickers for cover caps	6AV6 671-5BF00-0AX0
<b>Cover foils for Mobile Panel 177</b>  (pack of 10 each)	6AV6 574-1AD04-4AA0		<b>Key labeling strips MP 370 12" Key/MP 377 12" Key</b>  For function keys, (2 sheets per pack) (plastic)	6AV6 574-1AB00-2BA0
<b>Cover foils for Mobile Panel 277 8"</b>  Tough film to protect the touch display from dirt and scratches (set of 2 per pack)	6AV6 671-5BC00-0AX0			
<b>Cover foils for Mobile Panel 277 10"</b>  Tough film to protect from dirt and scratches (set of 10 per pack)	6AV6 645-7AB15-0AS0			
<b>Cover foils for TP 270 6", TP 277 6", MP 177 6" Touch, MP 270B 6" Touch, C7-635 Touch, HMI KTP600 Basic</b>  (pack of 10 each)	6AV6 574-1AD00-4DX0			

A: Subject to export regulations: AL: N and ECCN: EAR99H

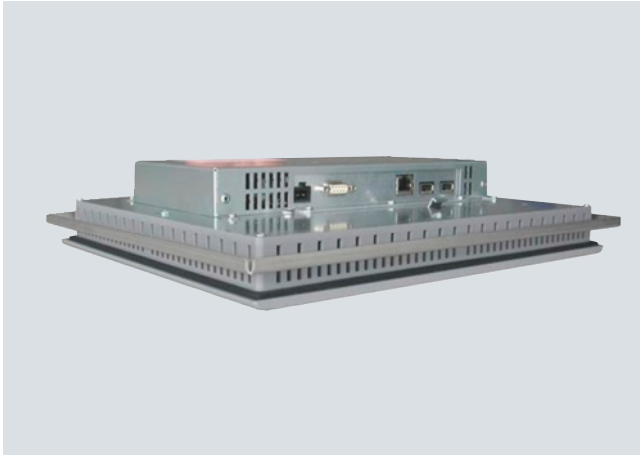
<sup>1)</sup> E14 = Product version 14<sup>2)</sup> E15 = product version 15

# Operator panels

## HMI Accessories

### Fixing elements

#### Overview



The clamping frames enable compliance with degrees of protection IP65, NEMA4x and NEMA12 (indoor only) if the thickness of the mounting plate is less than the minimum plate thickness specified in the manual. The clamping frame has been specially developed for plate thicknesses of less than 2 mm.

Aluminum and plastic spring-type clamping fixtures are available for attaching the panel.



For the Thin Client 10" Touch, the clamping frame is needed for plate thicknesses of less than 2 mm, for both IP54 and IP65 degrees of protection.

The clamping frames are available for the following products:

- KTP1000 Basic color
- SIMATIC MP 277 8" Touch
- SIMATIC MP 277 8" Key
- SIMATIC MP 277 10" Touch
- SIMATIC MP 377 12" Touch
- SIMATIC Thin Client 10" Touch

#### Ordering data

#### Order No.

##### Clamping frame

**for MP 277 8" Touch**

**6AV6 671-3CS00-0AX0**

**for MP 277 8" Key**

**6AV6 671-3CS01-0AX0**

**for 10"/12" Touch**

**6AV6 671-8XS00-0AX0**

can be used for:  
KTP1000, MP 277 10" Touch,  
MP 377 12" Touch,  
Thin Client 10"

##### Clamping fixture

**Spring-type clamping fixture**

**6AV6 671-8XK00-0AX2**

for KTP400 Comfort, KP400  
Comfort and TP/OP 77A/B,  
suitable for plate thicknesses up  
to 6 mm.

- 20 spring clamps per packaging unit

**Spring-type clamping fixture**

**6AV6 671-8XK00-0AX1**

For MP 177, TP/OP/MP 277, MP  
377 12" Touch, MP 377 15" Touch,  
Thin Client and all Basic Panels;  
suitable for sheet thickness of  
1 mm to 4 mm.

- 20 spring clamps per packaging unit

**Aluminum clamps**

**6AV6 671-8XK00-0AX0**

For MP 177, TP/OP/MP 277, MP  
377, Thin Client and all Basic  
Panels; suitable for sheet  
thickness of 4 mm to 6 mm.

- 20 aluminum clamps per packaging unit

**Overview***Print functions of SIMATIC HMI Panels*

	Hardcopy	Print log <sup>1)</sup>	Alarm logging	Fault message buffer	Event message buffer	Event record with filter	Print data record	Print all data records	Header/footer
<b>Comfort Panels</b>	•	•	•	• <sup>2)</sup>	• <sup>2)</sup>	• <sup>2)</sup>	• <sup>2)</sup>	• <sup>2)</sup>	• <sup>2)</sup>
<b>OP 77B</b>	•	•	•	• <sup>2)</sup>	• <sup>2)</sup>	• <sup>2)</sup>	• <sup>2)</sup>	• <sup>2)</sup>	• <sup>2)</sup>
<b>TP/OP 177B</b>	•	•	•	• <sup>2)</sup>	• <sup>2)</sup>	• <sup>2)</sup>	• <sup>2)</sup>	• <sup>2)</sup>	• <sup>2)</sup>
<b>TP/OP 277</b>	•	•	•	• <sup>2)</sup>	• <sup>2)</sup>	• <sup>2)</sup>	• <sup>2)</sup>	• <sup>2)</sup>	• <sup>2)</sup>
<b>MP 177</b>	•	•	•	• <sup>2)</sup>	• <sup>2)</sup>	• <sup>2)</sup>	• <sup>2)</sup>	• <sup>2)</sup>	• <sup>2)</sup>
<b>MP 277</b>	•	•	•	• <sup>2)</sup>	• <sup>2)</sup>	• <sup>2)</sup>	• <sup>2)</sup>	• <sup>2)</sup>	• <sup>2)</sup>
<b>MP 377</b>	•	•	•	• <sup>2)</sup>	• <sup>2)</sup>	• <sup>2)</sup>	• <sup>2)</sup>	• <sup>2)</sup>	• <sup>2)</sup>

- Functionality possible

<sup>1)</sup> Variable, messages, recipes

<sup>2)</sup> Included in log

Note:

OP 73micro, OP 73, OP 77A, TP 177micro, TP 177A do not include a printer interface

***Approved printers, sources of supply and printer settings***

You will find an overview of approved printers, sources of supply and printer settings on the Internet at:

<http://support.automation.siemens.com/WW/view/en/11376409>

# Operator panels

Notes

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