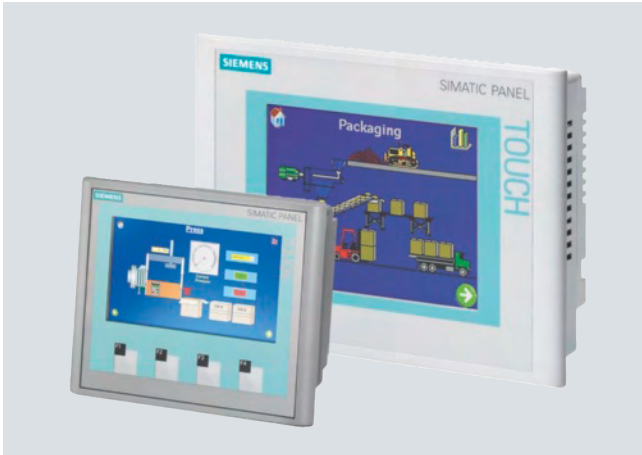# Operator control and process monitoring devices

Panels – 170 series

SIMATIC TP 177B

Overview

- Touch Panel with comprehensive 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 on-board
- The PROFINET interface is on-board 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 (DIN 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
- Graphics library available with off-the-shelf picture objects
- Standard interfaces for increasing the 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 build-ing-services automation.

The TP 177B is available in two display sizes: 4.3" TFT wide-screen 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 imple-mented 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 control and process monitoring devices
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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[1] 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) on-board
- PROFINET interface is already on-board 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 graphics 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

1) **C**old **C**athode **F**luorescence **L**amps

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
- Predefined 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 graphics editors.
- Curve functions and bars
  are used for the display of dynamic values in graphics-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

Configuring

Configuration is implemented using the innovative engineering tool SIMATIC WinCC flexible from version 2005 for the 6" versions or with WinCC flexible from version 2008 for the 4" version, in each case the Compact Edition or higher. SIMATIC WinCC flexible is the logical further development of the field-proven ProTool family.

Projects generated using ProTool can be easily migrated to WinCC. When OP17 projects are implemented, the project engineer must make certain changes following conversion as a result of the innovated display technology. Support is however provided by WinCC flexible. 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.

Additional options

- SINUMERIK
  Optionally with "SINUMERIK HMI copy license WinCC flexible CE". The SINUMERIK HMI engineering WinCC flexible package is also required for configuration.
  For further information see Catalog NC 60.
- Sm@rtService
  Remote operator control and monitoring of SIMATIC HMI systems based on TCP/IP networks
- Sm@rtAccess
  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.

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Technical specifications

SIMATIC TP 177B	6AV6 642-0BD01-3AX0 TP 177B Widescreen	6AV6 642-0BC01-1AX1 TP 177B Bluemode	6AV6 642-0BA01-1AX1 TP 177B color
Supply voltage			
Supply voltage	24 V DC	24 V DC	24 V DC
permissible range	+19.2 V ... +28.8 V DC	+20.4 V ... +28.8 V DC	+20.4 V ... +28.8 V DC
Rated current	0.2 A	0.24 A	0.24 A
Memory			
Type	Flash / RAM	Flash / RAM	Flash / RAM
Usable memory for user data	2 048 KByte usable memory for user data	2 048 KByte usable memory for user data	2 048 KByte usable memory for user data
Time of day			
Clock			
• Type	Hardware clock, battery backup, synchronizable	Hardware clock, battery backup, synchronizable	Hardware clock, battery backup, synchronizable
Protocols			
Protocols (terminal link)			
• Sm@rtAccess	Yes	Yes	Yes
Configuring			
Configuring tool	WinCC flexible Compact Version 2008 or higher (to be ordered separately)	WinCC flexible Compact Version 2005 or higher (to be ordered separately)	WinCC flexible Compact Version 2005 or higher (to be ordered separately)
Display			
Display type	TFT, 256 colors	STN, 4 shades of blue	STN, 256 colors
Size	4.3" (95 mm x 53 mm)	5.7" (120 mm x 90 mm)	5.7" (120 mm x 90 mm)
Resolution (WxH in pixel)	480 x 272	320 x 240	320 x 240
Backlighting			
• MTBF backlighting (at 25 °C)	Approx. 30 000 hours	about 50 000 hours	about 50 000 hours
Operating mode			
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
Touch operation			
• Touch screen	analog, resistive	analog, resistive	analog, resistive
• Numeric / alphabetical input	Yes (on-screen keyboard) / Yes (on-screen keyboard)	Yes / Yes	Yes / Yes
Ambient conditions			
Mounting position	vertical	vertical	vertical
maximum permissible angle of inclination without external ventilation	+/- 35 °	+/- 35 °	+/- 35 °
max. relative humidity (in %)	90 %	90 %	90 %
Temperature			
• Operation (vertical installation)	0 °C ... +50 °C	0 °C ... +50 °C	0 °C ... +50 °C
• Operation (max. tilt angle)	0 °C ... +40 °C	0 °C ... +40 °C	0 °C ... +40 °C
• Transport, storage	-20 °C ... +60 °C	-20 °C ... +60 °C	-20 °C ... +60 °C
Degree of protection			
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
Certifications & standards			
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
I/O			
I/O devices	Printer	Printer	Printer

Operator control and process monitoring devices
Panels – 170 series

SIMATIC TP 177B

▎ **Technical specifications** (continued)

SIMATIC TP 177B	6AV6 642-0BD01-3AX0 TP 177B Widescreen	6AV6 642-0BC01-1AX1 TP 177B Bluemode	6AV6 642-0BA01-1AX1 TP 177B color
Interfaces			
Interfaces	RS232 optional, 1 x RS422, 1 x RS485, 1 x Ethernet (RJ45) (max. 12 Mbit/s)	RS232 optional, 1 x RS422, 1 x RS485 (max. 12 Mbit/s)	RS232 optional, 1 x RS422, 1 x RS485, 1 x Ethernet (RJ45) (max. 12 Mbit/s)
PC card slot	No	No	No
CF card slot	No	No	No
Multi Media Card slot		1 x Multi Media Card slot	
USB port	1 x USB	1 x USB	1 x USB
Industrial Ethernet interface	1 x Ethernet (RJ45)	No	1 x Ethernet (RJ45)
Operating systems			
Operating system	Windows CE (Version 5)	Windows CE	Windows CE
Processor			
Processor	RISC 32-bit, 266 MHz	ARM, 200 MHz	ARM, 200 MHz
Functionality under WinCC flexible			
Applications / options	Sm@rtService, Sm@rtAccess	Sm@rtService, Sm@rtAccess	Sm@rtService, Sm@rtAccess
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 KByte integrated Flash, expandable	32 KByte integrated Flash, expandable	32 KByte 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
• Graphics 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
• Graphics list	100	100	100
• Libraries	Yes	Yes	Yes

Operator control and process monitoring devices

Panels – 170 series

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▍ Technical specifications (continued)

SIMATIC TP 177B	6AV6 642-0BD01-3AX0 TP 177B Widescreen	6AV6 642-0BC01-1AX1 TP 177B Bluemode	6AV6 642-0BA01-1AX1 TP 177B color
Functionality under WinCC flexible (continued)			
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
• Multi Media Card	Yes	Yes	Yes
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			
• Online languages	5	5	5
• 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	S5, S7-200, S7-300 / 400, TI 505, SINUMERIK, SIMOTION, Allen Bradley (DF1), Allen Bradley (DF485), Mitsubishi (FX), OMRON (LINK / Multilink), Modicon (Modbus), see chapter "System interfaces"	S5, S7-200, S7- 300 / 400, Win AC, SINUMERIK, SIMOTION, Allen Bradley (DF1), Mitsubishi (FX), Telemecanique (ADJUST), Modicon (Modbus), for further non-Siemens drivers, see section on "System interfaces"	S5, S7-200, S7- 300 / 400, Win AC, PC (TCP/IP), SINUMERIK, SIMOTION, Allen Bradley (DF1), Mitsubishi (FX), Telemecanique (ADJUST), Modicon (Modbus), for further non-Siemens drivers, see section on "System interfaces"
Expandability / openness			
• Open Platform Program	Yes	Yes	Yes
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 control and process monitoring devices
Panels – 170 series

SIMATIC TP 177B

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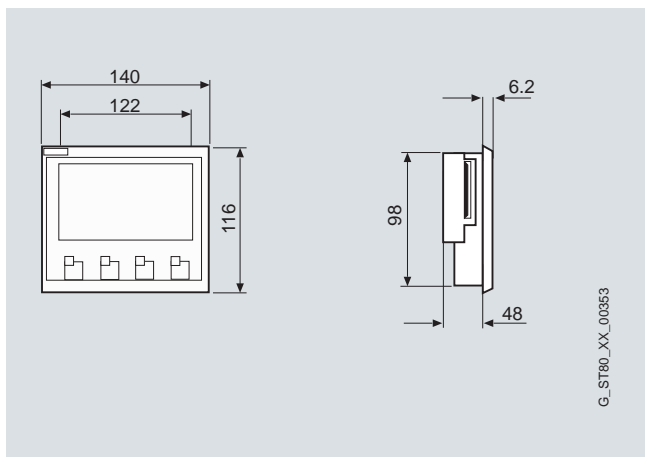| Ordering data		Order No.			Order No.
SIMATIC TP 177B				*Documentation* *(to be ordered separately)*	
Touch Panel with				**Operating Instructions** **TP 177micro / TP 177A /** **TP 177B / OP 177B** **(WinCC flexible)**	
• 4.3" TFT widescreen color display (256 colors)	H	**6AV6 642-0BD01-3AX0**		• German	**6AV6 691-1DG01-0AA1**
• 5.7" STN blue mode display (4 levels)	H	**6AV6 642-0BC01-1AX1**		• English	**6AV6 691-1DG01-0AB1**
• 5.7" STN color display (256 colors)	H	**6AV6 642-0BA01-1AX1**		• French	**6AV6 691-1DG01-0AC1**
incl. mounting accessories				• Italian	**6AV6 691-1DG01-0AD1**
TP 177B 4" starter kit	H	**6AV6 652-2KA00-0AA0**		• Spanish	**6AV6 691-1DG01-0AE1**
Consisting of:				**User Manual** **WinCC flexible Compact /** **Standard / Advanced**	
• TP 177B with 4.3" TFT widescreen color display (256 colors)				• German	**6AV6 691-1AB01-3AA0**
• SIMATIC WinCC flexible Compact configuration software				• English	**6AV6 691-1AB01-3AB0**
• SIMATIC HMI Manual Collection (DVD), 5 languages (En, Fr, Ger, It, Sp)				• French	**6AV6 691-1AB01-3AC0**
				• Italian	**6AV6 691-1AB01-3AD0**
• MPI cable (5 m) (for download and test purposes only)				• Spanish	**6AV6 691-1AB01-3AE0**
TP 177B 6" starter kit	H	**6AV6 551-2EA01-1AA0**		**User Manual** **WinCC flexible Communication**	
Consisting of:				• German	**6AV6 691-1CA01-3AA0**
• TP 177B with 5.7" STN color display (256 colors)				• English	**6AV6 691-1CA01-3AB0**
• Configuration software SIMATIC WinCC flexible Compact				• French	**6AV6 691-1CA01-3AC0**
• SIMATIC HMI Manual Collection (DVD), 5 languages (En, Fr, Ger, It, Sp)				• Italian	**6AV6 691-1CA01-3AD0**
				• Spanish	**6AV6 691-1CA01-3AE0**
• MPI cable (5 m) (for download and test purposes only), PC/PPI cable				**SIMATIC HMI** **Manual Collection** A	**6AV6 691-1SA01-0AX0**
Configuring software				Electronic documentation, on DVD	
with SIMATIC WinCC flexible		see HMI software chapter 4		5 languages (English, French, German, Italian and Spanish); contains: all currently available user manuals, manuals and communication manuals for SIMATIC HMI	
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)				*Accessories for* *supplementary ordering*	see HMI Accessories page 2/160 onwards
• with SIMATIC WinCC flexible Compact engineering software	G	**6AV6 621-0AA01-0AA0**			

A: Subject to export regulations: AL: N and ECCN: EAR99S
G: Subject to export regulations: AL: N and ECCN: 5D992
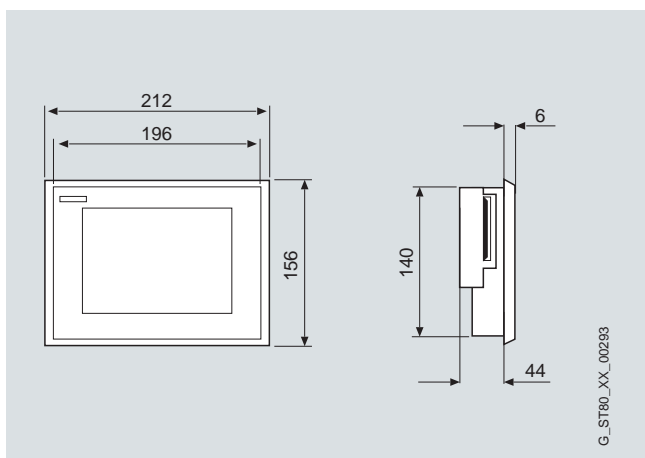H: Subject to export regulations: AL: N and ECCN: 5D002ENC3

■ Dimensions

All specifications in mm. Panel cutout see technical specifications.

SIMATIC TP 177B, 4" version

SIMATIC TP 177B PN / DP, 6" version

■ Further information

Additional information is available in the Internet under:

http://www.siemens.com/simatic-panels

Note:

Do you need a specific modification or option for the products described here? Then refer to "Customized products", where you will find information about additional sector-specific products that can be ordered as well as about options for customer-specific modification and adaptation.

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