SIEMENS
Ingenuity for life

Engineered with TIA Portal

Machine-level visualization with SIMATIC HMI

Efficient to a new level

siemens.com/hmi

New standards for productivity – for a sustainable competitive advantage

Efficient engineering – the basis for innovation
The Swiss company Solinaut provides engineering services and software development for automation solutions. In cooperation with Siemens and by using the TIA Portal (Totally Integrated Automation) the system integrator provided the company valuable benefits.

Programmers save a great deal of time in the development. For example, several parameters can be created in a single step when engineering in the TIA Portal and blocks can be saved in libraries. In this way, Solinaut can concentrate on the important aspects of clear and intuitive visualization in an automation solution.

The results are tailor-made solutions to meet the needs of end users. For one such company, the Altendorf cheese dairy, it has more than paid for itself.

"Overall, we saved a lot of time in development and became even more flexible in terms of engineering."

(Florian Ruegg, Solinaut GmbH)

Feast for the eyes – just like the cheese
Companies such as the Altendorf cheese dairy depend on automation due to the increasing global competition. One factor in this regard is to consistently make full use of the potential for optimization over the complete life cycle of a machine or plant. Specifically, this means less consumption of resources in production and to provide an operation intuitive enough that staff can concentrate on the quality of products.

This is why system integrator Solinaut developed a customized visualization concept for the Altendorf cheese dairy with decisive advantages:

- Enormously simplified process control for employees, including special panel screens with flowcharts
- Quick access to functions through slide-in and pop-up windows
- More control and easy maintenance with remote access

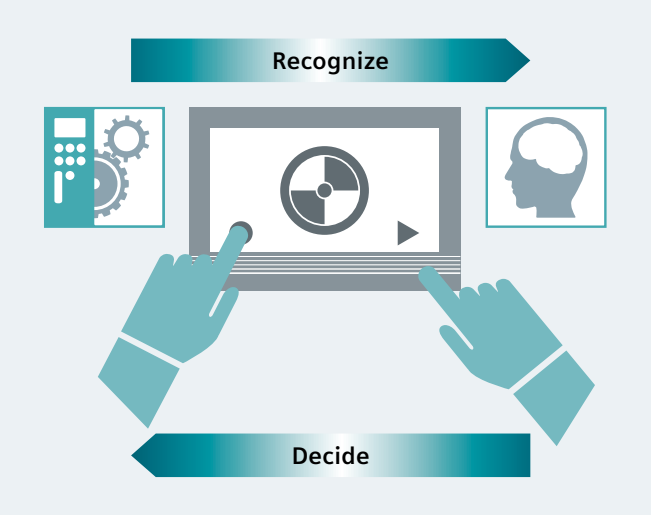
This investment in automation has already paid off. The time spent in daily production has practically been cut in half. The dairy now uses significantly less energy and water. Owner Erich Keller can look positively into the future.

Find out more:
siemens.com/hmi-video-solinaut

Find out more:
siemens.com/hmi-video-altendorf

SIMATIC HMI – the sm@rt interface
HMI solutions are the only interface between man and machine. Optimal interaction between the two makes a valuable contribution in the following ways:

- Productivity – means competitiveness
- Efficiency – means cost savings
- Usability – means time savings



Added value = More value!

Efficient engineering

Create your visualization faster and more easily than ever before!

Innovative design and operation

Make visualizing the calling card for your machine!

Brilliant HMI devices

Use the right HMI device for your application!

Safe and secure

Protect your investment, your know-how and ensure reliable operation!

Commissioning in the fast lane

Waste no time with testing and servicing!

Openness with PC-based

You and your applications remain flexible and independent!

Find out more:
siemens.com/hmi-added-values

SIMATIC HMI

Efficiency in machine-level operator control and monitoring

Equipment for monitoring and operator control is needed wherever people have to work with machinery and plants performing tasks A to Z. It is not difficult to find the right device for the specific task. The challenge is to find a solution that is future-proof and flexible, that can be integrated into higher-level networks, and that can also meet the ever-increasing demands for transparency and data provision.

SIMATIC HMI Panels have proven their value in many different applications in all industrial sectors over many years. The range of the systems in use is just as wide as that of the applications and technologies in the respective plants.

SIMATIC HMI Software in the TIA Portal – more than just a visualization software
From machine-level visualization all the way to the high-performance SCADA system, SIMATIC WinCC in the TIA Portal and its efficient tools covers the entire engineering and visualization software spectrum – integrated across all performance classes!

Basic HMI:
SIMATIC WinCC Basic – the engineering software for simple solutions, optimized for control of the Basic Panels.

Advanced HMI Panel-based:
SIMATIC WinCC Comfort – the software for complex solutions with all HMI Panels.

Advanced HMI PC-based:
SIMATIC WinCC Advanced – engineering and runtime software for simple single-user systems, especially on the machine level.

SCADA:
SIMATIC WinCC Professional – engineering and runtime software for comprehensive multi-user systems and SCADA solutions in small and medium-sized plants.

Find out more:
siemens.com/wincc

Basic HMI

Panel-based

HMI devices with excellent price-performance ratio for simple visualization tasks

Advanced HMI

Panel-based

High-perform devices with venience for visualization

Low **Application complexity &**

For entry-level
Basic HMI is recommended for simple applications with a limited quantity scale and where the price-performance ratio is important in addition to a fast and intuitive operation. The devices offer a brilliant display quality and high-power visualization. This significantly facilitates the operation even of simple machines and equipment. Through turnkey and flexible solutions, you also save valuable time during installation and engineering.

Find out more:
siemens.com/basic-hmi

“The operation is now more modern, looks better and operation has become more reliable at the same time.”

Erich Keller, owner of the Altendorf cheese dairy

ance HMI
high con-
demanding
tasks

PC-based

High-performance HMI devices for data-intensive and complex visualization tasks

system performance → High

For higher demands

If you are looking for a panel-based solution for more demanding applications with larger quantity scales, make a decision for Advanced HMI.

The user benefits from excellent functionality and a wide range of devices and applications, with key or touch operation. Both stationary and mobile solutions are available.

Find out more:
siemens.com/advanced-hmi-panel

For very high-end solutions

If production places particularly high demands on the quantity and type of information that must be processed and documented, a PC-based system is recommended. It offers the appropriate options for sufficient storage space, processing power, and data connectivity.

The user can either opt for a centralized solution, in which the visualization and PC are a single unit, or for a decentralized solution with an industrial monitor as a thin client.

More on SCADA systems at:
siemens.com/advanced-hmi-pc

SIMATIC Basic HMI

Economic realization of simple HMI tasks

SIMATIC HMI Key Panels

You can use the SIMATIC HMI KP8 / KP8F and KP32F key panels to quickly realize operator panels. Since they are prefabricated and ready for installation, you will save a lot of time and money setting them up.

A smart alternative to long-travel keys:

- Flexible installation and direct installation in the control cabinet (IP65)
- Buttons with LED backlighting (5 colors)
- Connection via PROFINET with integrated switch
- Digital I/Os for connecting key switches or lamps, for example
- Integrated safety functionality; fail-safe transmission of safety-related signals via PROFIsafe

Your advantages at a glance

- **Up to 60% less overhead for wiring and installation**
- **Direct connection of an emergency stop button or other fail-safe signals possible**
- **Easy integration into the automation solution**

Find out more:
siemens.com/key-panels

SIMATIC HMI Basic Panels

Basic Panels are made for the cost-effective implementation of simple visualization tasks on the machine level. Their basic features and functionality as well as the especially attractive price make them perfect entry-level devices.

Beauty is simplicity:

- High-resolution, dimmable widescreen displays from 4" to 12" with 64,000 colors (also configurable for portrait format)
- Combined operation via touch screen and freely configurable keys
- USB connection for project transfer, data archiving, keyboard, mouse, etc.
- PROFIBUS or PROFINET versions for process communication

Your advantages at a glance

- **Highest usability through innovative graphical user interface**
- **Fast start-up and archivable data recording**
- **Perfect interaction with the S7-1200 basic controller**

Find out more:
siemens.com/basic-panels-2nd

Did you know?

To start smart and save money, we offer starter kits in conjunction with one of our basic controllers – SIMATIC S7-1200 or LOGO!

Find out more:
siemens.com/basic-panels-starter-kits

Devices for special requirements

SIPLUS
For simple automation tasks under extreme environmental conditions, special hardened SIPLUS versions are available offering increased operational reliability.

The standard for extreme conditions:
- Corrosive gas resistance to chemical, biological and mechanically active substances and salt mist
- 100% dewing and ice formation allowed
- Extended temperature range (–40 to +70 °C)
- Installation altitudes of –1,000 to +5,000 meters

Your advantages at a glance

- **Continuous operation even in rough conditions**
- **Reduced production downtime and performance degradation**
- **High degree of investment security**

Find out more:
siemens.com/siplus-extreme

“In our company where, in effect, a single person does all the engineering, we notice the excellent support provided by the TIA Portal.”

(Markus Achermann,
Managing Director of AC Schwimmbadtechnik)

The company, based in Hochdorf near Lucerne Switzerland, designs and builds exclusive swimming pools and jacuzzis. Their customers are private clients, architects, as well as operators of hotels or campsites.

AC Schwimmbadtechnik is using a new operating concept to simplify the control and water treatment of private swimming pools with the aid of S7-1200 controllers and Basic Panels.

The Basic package replaces the previous solution that had several LEDs and push buttons, so now there is only one panel for all messages and information. This allows even non-specialists or private users to operate their water treatment very easily and to instantly know what to do.

Such an integrated solution offered many advantages for AC Schwimmbadtechnik as well. A relatively small company often lacks the resources to have in-house know-how for a variety of systems. Standard software significantly reduces the work involved.

Find out more:
siemens.com/hmi-reference-ac

SIMATIC Advanced HMI

Realization of demanding, complex HMI tasks with a high level of convenience

SIMATIC HMI Comfort Panels

SIMATIC HMI Comfort Panels are designed for implementation of high-performance visualization applications on the machine-level. High performance, functionality and numerous integrated interfaces offer the greatest convenience in high-end applications.

Convenience without compromise:

- Brilliant, stepless dimmable widescreen displays from 4" to 22" with 16 million colors (configurable for portrait format)
- Touch or key operation and viewing angles of up to 170°
- Integrated system card for automatic backups
- Power management on the machine, even with PROFIenergy
- Perfect interaction with the advanced controller SIMATIC S7-1500

Your advantages at a glance

- **Wide range of products, continuously scalable**
- **Flexibility thanks as standard functionality (including VB scripts and various viewers for system documentation and websites)**
- **Maximum data security, also in case of service**

Find out more:
siemens.com/comfort-panels

SIMATIC HMI Mobile Panels

Take power and safety directly in your hands. When it comes to high-end mobile applications, opt for mobile panels. These are also for fail-safe machines and widely distributed plants.

Safe and secure:

- Brilliant, stepless dimmable widescreen displays with 4", 7" or 9" and 16 million colors
- Location identification via terminal box
- Comprehensive, integrated solutions with Safety Integrated
- Flexible evaluation of the safety switch elements, for example, via fail-safe S7 controllers
- Unique illuminated emergency stop button with PROFIsafe

Your advantages at a glance

- **Highly ergonomic, combined with industrial design**
- **Space-saving and flexible in connection and installation**
- **Unique integration in safety applications**

Find out more:
siemens.com/mobile-panels

Did you know?

To start smart and save money, we offer starter kits with Comfort Panel, SIMATIC WinCC Comfort and accessories!

Find out more:
siemens.com/comfort-panels-starter-kits

Devices for special requirements

Outdoor Panels

The outdoor panels are specifically designed for outdoor use and certified for numerous industries. They are extremely robust, readable in all lighting conditions, and safe to use.

"Convenience" for any use outdoors:

- Extreme application ranges from –30 °C to +60 °C at an elevation of 3,000 meters
- IP66-protected front panel with high UV resistance
- Glare-free daylight-readable display with automatic brightness control
- High vibration and shock resistance

Further versions available:

PRO INOX SIPLUS

Find out more:
siemens.com/comfort-outdoor

"The visualization fulfills all of our needs: colors, pop-up and slide-in windows. Everything works and looks great."

Jörg Koziol, Project Manager at Sesitec

The name Sesitec has become synonymous with the aquatic sports scene. The company has been developing water ski and wakeboard parks since 1992, both for amateur athletes as well as for professional tournaments. Over 320 installations have already been set up worldwide. Sesitec is considered the market leader within the segment.

The most important asset for these parks is the fun factor, not only for the visitors. The park operators also want to have fun operating the facilities. The control unit plays a pivotal role here. A large, clearly structured display is important, also that it is able to withstand harsh outdoor conditions, including heat, extreme lighting conditions, moisture, vibrations and, particularly during the summer, hand lotion!

In the end, an HMI Comfort Outdoor Panel was selected, which proved to be a perfect fit. No matter the sun's angle or intensity: The operator always has a good view of everything on the bright, contrasting display. With the appropriate engineering, additional processes such as the cross-examination of tickets can also be integrated into the visualization. As a result, the overall operation has become more customer-friendly and transparent. That also means: more attention for each individual customer.

Find out more:
siemens.com/hmi-video-turncable

SIMATIC Advanced HMI

Efficient realization of even the most demanding and complex HMI tasks

SIMATIC Industry Panel PCs

The most complex visualization and control tasks can be realized centrally on the machine with extremely compact industrial panel PCs. From embedded to the high-end industrial PCs, you can find optimum solution in our portfolio – to meet the many requirements of your automation system.

Greater emphasis on individuality:

- Brilliant widescreen displays from 7" to 22" with innovative single- or multi-touch technology
- High-performance processors and fast, robust mass storage (SSD, CFast)
- A variety of interfaces and configurations
- High quality and serviceability

Your advantages at a glance

- **Processing large amounts of data quickly**
- **Flexible configuration and expansion**
- **High data security and system availability in continuous operation**

Find out more:
siemens.com/simatic-ipc

SIMATIC IFP and SIMATIC ITC

Siemens has two innovative options for distributed control concepts. SIMATIC industrial monitors and thin clients are used as desktop devices for control centers, as built-in devices for operator panels or as PC-based visualization and control solutions in which the control unit is operated separately.

Much more than just an industrial monitor!

- Brilliant widescreen displays from 12" to 22" with single- (ITC) or multi-touch technology (IFP) and fast response times
- For installation or support arm / pedestal mounting (IP65)
- For the industrial 24-hour use
- Detached placement via DisplayPort / DVI, USB or Ethernet (ITC)

Your advantages at a glance

- **High system availability ensured**
- **Universal application: 15m / 30m / unlimited**
- **Very user-friendly with gesture and multi-touch operation**

Find out more:
siemens.com/simatic-ifp and siemens.com/simatic-itc

Devices for special requirements

IP65

SIMATIC PRO – for all-round protection

The HMI PROtected system allows you to specifically configure all-round, IP65-protected HMI devices for your individual applications and machines. Selecting the appropriate HMI device in the necessary performance class and size, configurating needed expansions and installing the customized product directly on the machine is extremely easy.

Advantages at a glance

- **Continuously scalable for performance class and size**
- **Individually configurable expansions and installation**
- **Attractive operator control solutions, winner of the IF Design Award 2017**

Find out more:
siemens.com/simatic-hmi-pro

INOX

INOX – for hygienic production

These tested stainless steel devices offer safety and cleanliness for hygienic applications in the field of pharmaceuticals, fine chemicals and the food and beverages industry. Their smooth, splinter-proof surface with degree of protection IP66K is easy to clean and liquids run off quickly.

EX – for genuinely hard cases

The HMI devices for hazardous areas can be used in zones 1/21 and 2/22 without implementing special measures, such as costly enclosures or additional certifications. This also applies to the chemical, oil/gas or shipbuilding industries.

Find out more:
siemens.com/inox-hmi-devices
siemens.com/simatic-hmi-ex

"The user-friendliness of our machines is an important factor for our customers. It's an area where we can now score even more points."

Stefan Müller, Hans Weber Maschinenfabrik GmbH

The Hans Weber Maschinenfabrik GmbH located in Kronach, Germany has been in business for over 100 years. The company has always been a manufacturer of automatic grinding machines, both for metals as well as for wood. Its industrial wood-processing machines can be found in the most complex areas of application.

To maintain a decisive advantage over other competitors, the company particularly focuses its efforts on the quality and efficiency of its products. This is achieved through the use of innovative technologies such as contact-free workpiece detection and the proprietary CBF sanding technology.

The company not only stresses that the sanding results be perfect, but also the workmanship of the machines themselves. The more superior the quality of the product, the more important the design of the machines becomes. These days, that includes intuitive touch screen control. For its WEBER i-Touch control concept, a SIMATIC HMI PRO Comfort Panel was therefore chosen.

The sophisticated design underscores the quality workmanship of the machine components. Combined with a matching extension unit, it greatly simplifies the work at the machine. More than ever before, the machine has become a showcase for the client.

Find out more:
siemens.com/hmi-video-weber

Did you know?

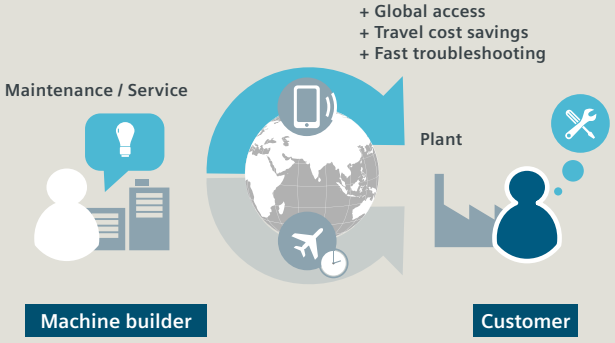
Wherever your specific needs are not fully met by our standard equipment, Customized Automation provides the perfect solution. For example, we offer custom front panels that are available in a few days, even in small quantities.

Find out more:
siemens.com/customized-automation

Smart remote control and monitoring

With the SIMATIC WinCC Sm@rtClient app (for Android and iOS), you get mobile remote operating and monitoring on your smartphone or tablet. You are thus informed at all times and can react accordingly even when you are not on-site. This innovative, web-based solution is also possible overarching SCADA applications with WinCC Professional.

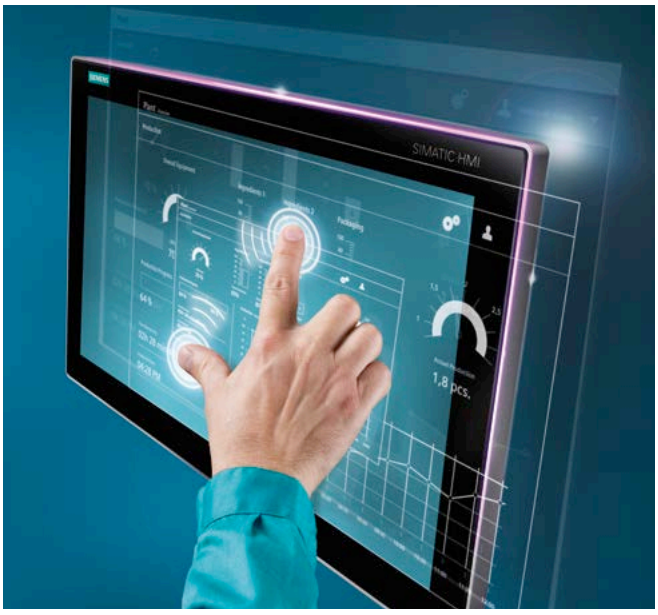
Global service of machines and plants



Find out more:
siemens.com/wincc-smart-client

Innovation in design and operation – glass front with multi-touch

The Industrial Flat Panels and some Panel PCs from Siemens support fast operation by means of intuitive gestures. This makes your visualization solutions become even more innovative and efficient.



More touch with multi-touch:

- Projected capacitive touch technology with simultaneous detection of 5 fingers
- Automatic detection of inadvertent contacts, e.g. with palm, drops, dirt etc.
- Anti-reflective glass front, scratch-resistant and chemical resistant
- Contrasting and sharp image display
- Approvals for various industries (e.g. shipbuilding or hazardous areas)

Find out more:
siemens.com/hmi-multitouch

The system solution for optimizing production

PC-based SIMATIC HMI/SCADA systems and SIMATIC industrial PCs form a high-performance and reliable platform for the acquisition, evaluation and visualization of data. The coordinated and certified package of hardware and software offers the highest quality in all areas.

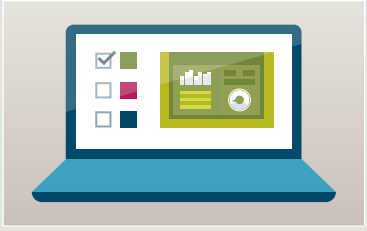
Find out more:
siemens.com/scada-ipc

The top 3 tools for your optimum HMI solution

HMI Toolbox

It is usually the small things that make everyday life easier. For example, we offer: A stopwatch, calculator, calendar and many more such devices.

HMI Templates & Designs



Simply drag and drop to create unique user interface – with perfect usability and modifiable designs!

HMI Option+

Simple and secure configuration of IT-related functions during operation.

Technology overview

SIMATIC Basic HMI:

SIMATIC HMI Key Panels



Devices for special requirements

Outdoor – for the outdoor area

Extremely robust HMI panels with IP66 for the outdoor area and designed for numerous industries.

siemens.com/comfort-outdoor

PRO – for all-round protection

IP65

All-round IP65 protected devices / enclosure type 4X/12 for flexible mounting on the support arm or stand.

siemens.com/ip65-hmi-geraete

INOX – for hygienic production

INOX

Certified stainless steel devices (IP66K) for safety and cleanliness in the hygienic area.

siemens.com/inox-hmi-geraete

SIPLUS – the standard xtremextreme conditions

Specially hard-ened versions for increased opera-tional reliability under extreme conditions.

siemens.com/siplus-extreme

EX – for genuinely hard cases

HMI devices that can be used directly in hazardous areas (zone 2/22). [8)]

siemens.com/simatic-hmi-ex

	KP8 PN	KP8F PN	KP32F PN
Type of operation			
Function keys (programmable)	8	8	32
Output type			
LED colour modes	5 (green, red, yellow, blue, white)		
Typical service life			
Short-stroke keys (in number of switching cycles)	1,500,000		
Light-emitting diodes (ON period in %)	100 %		
Interfaces			
Digital inputs / outputs [1)]	8	8	16
Fail-safe inputs SIL 2 / SIL 3	– / –	1/2	2/4
PROFINET with integrated switch	2	2	2
Functionality			
Push button and lamp test	•		
Degree of protection			
Front / rear	IP65 / IP20		
Anschluss zur Steuerung			
SIMATIC S7, WinAC	S7-1200 S7-1500 S7-300 S7-400	S7-1200 [2)] S7-1500 [2)] S7-300 (F) S7-400 (F)	
SIMATIC S5	•		
SINUMERIK	•		
SIMOTION	•		
Engineering software			
Configuration	STEP 7 V5.5 or STEP 7 Basic V11 and higher or third-party systems (GSD, GSD-ML)		
Ambient conditions			
Mounting position	Portrait or landscape format		
Max. permissible angle of inclination without forced ventilation (in °)	+ / – 30		
Max. relative humidity (in %)	< 90		
Temperature			
Operation (vertical installation) in °C	0 ... +55	0 ... +55	0 ... +55
Operation (max. angle of inclination) in °C	0 ... +45	0 ... +45	0 ... +45
Dimensions			
Enclosure front (W x H in mm)	98 x 155	98 x 155	295 x 155
Installation cutout / device depth (W x H / D in mm)	68 x 129 / 49	68 x 129 / 49	275 x 135 / 39
Article No.*)	**6AV3688-3AY36-0AX0**	**6AV3688-3AF37-0AX0**	**6AV3688-3EH47-0AX0**

*) You can find current ordering data and terms and conditions of sales and delivery in the Catalog ST 80/ST PC and on the Internet at **www.siemens.com/industrymall**

inexpensive realization of simple HMI tasks

	SIMATIC HMI Basic Panels				
	2nd Generation	2nd Generation	2nd Generation	2nd Generation	
					
	KTP400 Basic	KTP700 Basic DP KTP700 Basic	KTP900 Basic	KTP1200 Basic DP KTP1200 Basic	KP300 Basic mono PN KP400 Basic color PN
Type of operation	**4" Touch + Key**	**7" Touch + Key**	**9" Touch + Key**	**12" Touch + Key**	**3,6" Key** **4" Key**
Display	Widescreen TFT, 65k colors, LED backlighting				FSTN-LCD Black&White Widescreen TFT
Size (in inches)	4,3"	7"	9"	12,1"	3,6" 4,3"
Resolution (W x H in pixels)	480 x 272	800 x 480	800 x 480	1,280 x 800	240 x 80 480 x 272
MTBF [5] backlighting (in h)	20,000	20,000	20,000	20,000	50,000
Front dimensions (in mm)	141 x 116	214 x 158	267 x 182	330 x 245	165 x 97 150 x 186
Operator controls	Touch screen and tactile keys	Touch screen and tactile keys	Touch screen and tactile keys	Touch screen and tactile keys	Tactile keys
Function keys (programmable) / system keys	4 / –	8 / –	8 / –	10 / –	10 / • 8 / •
Usable memory					
User memory	10 MB	10 MB	10 MB	10 MB	1 MB
Memory for options / recipes [4]	– / 256 KB	– / 256 KB	– / 256 KB	– / 256 KB	– / 40 KB
Alarm buffer	•	•	•	•	•
Interfaces					
Serial / MPI / PROFIBUS DP / PROFINET (Ethernet)	– / – / – / •	• [3] / • / • / – – / – / – / •	– / – / – / •	• [3] / • / • / – – / – / – / •	– / – / – / •
USB-Host / USB-Device	1 / –	1 / –	1 / –	1 / –	–
Slot for CF / Multimedia / SD	– / – / –	– / – / –	– / – / –	– / – / –	– / – / –
Functionality (when configured with WinCC TIA Portal)					
Signaling system (number of messages / message classes)	1,000 / 32	1,000 / 32	1,000 / 32	1,000 / 32	200 / 32
Prozess pictures	250	250	250	250	50
Tags	800	800	800	800	250 500
Vector graphics	•	•	•	•	•
Bar charts / trend diagrams	• / f(t)	• / f(t)	• / f(t)	• / f(t)	• / f(t)
Faceplates	–	–	–	–	–
Recipes	50	50	50	50	5
Archiving / Visual Basic scripts	• / –	• / –	• / –	• / –	– / –
PG functions	–	–	–	–	–
Connection to PLC					
SIMATIC S7 / SIMATIC WinAC	• / •	• / •	• / •	• / •	• / •
SINUMERIK / SIMOTION	• [6] / •	• [6] / •	• [6] / •	• [6] / •	– / –
Allen Bradley / Mitsubishi	• / •	• / •	• / •	• / •	• / • • / –
Modicon / Omron	• / –	• / • • / –	• / –	• / • • / –	• / –
Engineering software					
Configuration	WinCC Basic V13 or higher	WinCC Basic V13 or higher	WinCC Basic V13 or higher	WinCC Basic V13 or higher	WinCC Basic V11 or higher
Options, application					
Sm@rtServer / Audit / Logon (V15.1 or higher)	• (V14 or higher) / – / –	• (V14 or higher) / – / –	• (V14 or higher) / – / –	• (V14 or higher) / – / –	– / – / –
OPC-Server / HTML-Browser	– / •	– / •	– / •	– / •	– / –
Article No.*)	**6AV2123-2DB03-0AX0**	**6AV2123-2GA03-0AX0** **6AV2123-2GB03-0AX0**	**6AV2123-2JB03-0AX0**	**6AV2123-2MA03-0AX0** **6AV2123-2MB03-0AX0**	**6AV6647-0AH11-3AX0** **6AV6647-0AJ11-3AX0**

[1] Freely configurable [2] F-Safety, if supported by CPUs [3] RS232 with adapter [4] Integrated Flash, expandable via memory card

Technology overview

SIMATIC Advanced HMI, Panel-based:

SIMATIC HMI Comfort Panels

	KTP400 Comfort KP400 Comfort	TP700 Comfort KP700 Comfort	TP900 Comfort KP900 Comfort	TP1200 Comfort KP1200 Comfort	TP1500 Comfort [7] KP1500 Comfort
Type of operation	**4" Touch + Key 4" Key**	**7" Touch 7" Key**	**9" Touch 9" Key**	**12" Touch 12" Key**	**15" Touch 15" Key**
Display			Widescreen TFT, 16 million colors, LED backlighting		
Size (in inches)	4,3"	7"	9"	12,1"	15,4"
Resolution (W x H in pixels)	480 x 272	800 x 480	800 x 480	1,280 x 800	1,280 x 800
MTBF [5] backlighting (in h)	80,000	80,000	80,000	80,000	80,000
Front dimensions (in mm)	140 x 116 152 x 188	214 x 158 308 x 204	274 x 190 362 x 230	330 x 241 454 x 289	415 x 310 483 x 310
Operator controls	Touch screen or tactile keys	Touch screen or tactile keys	Touch screen or tactile keys	Touch screen or tactile keys	Touch screen or tactile keysn
Function keys (programmable) / system keys	4 (with LED) / – 8 (with LED) / •	– / – 24 (with LED) / •	– / – 26 (with LED) / •	– / – 34 (with LED) / •	– / – 36 (with LED) / •
Usable memory					
User memory	4 MB	12 MB	12 MB	12 MB	24 MB
Memory for options / recipes [4]	4 MB / 512 KB	12 MB / 2 MB	12 MB / 2 MB	12 MB / 2 MB	24 MB / 4 MB
Alarm buffer	•	•	•	•	•
Interfaces					
Serial / MPI / PROFIBUS DP / PROFINET (Ethernet)	• [3] / • / • / 1	• [3] / • / • / 2	• [3] / • / • / 2	• [3] / • / • / 2	• [3] / • / • / 3
USB-Host / USB-Device	1 / 1	2 / 1	2 / 1	2 / 1	2 / 1
Slot for CF / Multimedia / SD	– / • / •	– / • / •	– / • / •	– / • / •	– / • / •
Functionality (when configured with WinCC TIA Portal)					
Signaling system (number of messages / message classes)	2,000 / 32	4,000 / 32	4,000 / 32	4,000 / 32	6,000 / 32
Prozess pictures	500	500	500	500	750
Tags	1,024	2,048	2,048	2,048	4,096
Vector graphics	•	•	•	•	•
Bar charts / trend diagrams	• / f(t), f(x)	• / f(t), f(x)	• / f(t), f(x)	• / f(t), f(x)	• / f(t), f(x)
Faceplates	•	•	•	•	•
Recipes	100	300	300	300	500
Archiving / Visual Basic scripts	• / •	• / •	• / •	• / •	• / •
PG functions				STATUS / CONTROL, diagnostics viewer	
Connection to PLC					
SIMATIC S7 / SIMATIC WinAC	• / •	• / •	• / •	• / •	• / •
SINUMERIK / SIMOTION	• / •	• / •	• / •	• / •	• / •
Allen Bradley / Mitsubishi	• / •	• / •	• / •	• / •	• / •
Modicon / Omron	• / • • / •	• / • • / •	• / • • / •	• / • • / •	• / •
Engineering software					
Configuration	WinCC Comfort V11 or higher	WinCC Comfort V11 or higher	WinCC Comfort V11 or higher	WinCC Comfort V11 or higher	WinCC Comfort V14 SP1or higher
Options, application					
Sm@rtServer / Audit / Logon (V15.1 or higher)	• / • / •	• / • / •	• / • / •	• / • / •	• / • / •
OPC-Server / HTML-Browser	• / •	• / •	• / •	• / •	• / •
Article No.*)	**6AV2124-2DC01-0AX0 6AV2124-1DC01-0AX0**	**6AV2124-0GC01-0AX0 6AV2124-1GC01-0AX0**	**6AV2124-0JC01-0AX0 6AV2124-1JC01-0AX0**	**6AV2124-0MC01-0AX0 6AV2124-1MC01-0AX0**	**6AV2124-0QC02-0AX1 6AV2124-1QC02-0AX1**

[5] Reduction of brightness by 50%, can be extended by dimming and PROFIenergy,

implement complex HMI tasks with a high level of user convenience

			SIMATIC HMI Mobile Panels		
			2nd Generation	2nd Generation	2nd Generation
					
	TP1900 Comfort	TP2200 Comfort	KTP400F Mobile	KTP700 Mobile KTP700F Mobile	KTP900 Mobile KTP900F Mobile
	19" Touch	**22" Touch**	**4" Touch + Key**	**7" Touch + Key**	**9" Touch + Key**
			Widescreen TFT, 16 million colors, LED backlighting		
	18,5"	21,5"	4,3"	7"	9"
	1,366 x 768	1,920 x 1,080	480 x 272	800 x 480	800 x 480
	50,000	30,000	50,000	50,000	50,000
	483 x 337	560 x 380	194 x 166	248 x 172 248 x 195	307 x 201 307 x 224
	Touch screen	Touch screen	Touch screen and tactile keys	Touch screen and tactile keys	Touch screen and tactile keys
	– / –	– / –	4 (with LED) / –	8 (with LED) / –	10 (with LED) / –
	24 MB	24 MB	4 MB	12 MB	12 MB
	24 MB / 4 MB	24 MB / 4 MB	4 MB / 512 KB	12 MB / 2 MB	12 MB / 2 MB
	•	•	•	•	•
	• [3] / • / • / 3	• [3] / • / • / 3	– / – / – / 1	– / – / – / 1	– / – / – / 1
	2 / 1	2 / 1	1 / –	1 / –	1 / –
	– / • / •	– / • / •	– / • / •	– / • / •	– / • / •
	6,000 / 32	6,000 / 32	2,000 / 32	4,000 / 32	4,000 / 32
	750	750	500	500	500
	4,096	4,096	1,024	2,048	2,048
	•	•	•	•	•
	• / f(t), f(x)	• / f(t), f(x)	• / f(t), f(x)	• / f(t), f(x)	• / f(t), f(x)
	•	•	•	•	•
	500	500	100	300	300
	• / •	• / •	• / •	• / •	• / •
			STATUS / CONTROL, diagnostics viewer		
	• / •	• / •	• / •	• / •	• / •
	• / •	• / •	• / •	• / •	• / •
	• / •	• / •	• / •	• / •	• / •
	• / •	• / •	• / •	• / •	• / •
	WinCC Comfort V14 SP1 or higher	WinCC Comfort V14 SP1 or higher	WinCC Comfort V13 SP1 or higher	WinCC Comfort V13 SP1 or higher	WinCC Comfort V13 SP1 or higher
	• / • / •	• / • / •	• / • / •	• / • / •	• / • / •
	• / •	• / •	• / •	• / •	• / •
	6AV2124-0UC02-0AX1	**6AV2124-0XC02-0AX1**	**6AV2125-2DB23-0AX0**	**6AV2125-2GB03-0AX0** **6AV2125-2GB23-0AX0**	**6AV2125-2JB03-0AX0** **6AV2125-2JB23-0AX0**

[6] KNo access to NCK Data, [7] Memory, scope of functions and quantity structures as for TP1200, [8] Panel PC EX and ThinClient EX for Zone 1/21

Technology overview

	SIMATIC Advanced HMI, PC-based:		
	SIMATIC IPC277E		
			
General features	**Panel PC, 7" Touch**	**Panel PC, 9" Touch**	**Panel PC, 12" Touch or Multitouch**
Resolution in pixels (widescreen)	(800 x 480)	(800 x 480)	(1,280 x 800)
Processor	Intel Celeron N2807 (2C / 2T, 1,58 (2.16) GHz, 1 MB cache, VT-x); Intel Celeron N2930 (4C / 4T, 1,83 (2.16) GHz, 2 MB cache, VT-x)		
Main memory	2 GB, 4 GB or 8 GB; 512 KByte NVRAM optional		
Free expansion slots	–		
Operating systems (preinstalled and activated)	Windows Embedded Standard 7 (E / P), 32 Bit / 64 Bit; Windows 7 Ultimate, MUI [1], 32 Bit / 64 Bit; Windows 10 IoT Enterprise, 64 Bit, MUI		
Packages / bundles	Packages with WinCC RT Advanced, WinCC V7 and WinAC RTX (F) / Bundles / Windows 10 Enterprise		
Power supply / temporary voltage interruption	DC 24 V; 20.4 - 28.8 V; isolated / max. 10 ms (according to NAMUR); On/Off switch		
MTBF backlighting	up to 80,000 h [7]; dimmable from 0 to 100%		
Drives			
Mass storage	CFast up to 16 GB (accessible from outside); SSD 240 / 480 GB; HDD 320 GB (IPC227E only)		
Optical drives	–		
Interfaces			
Fieldbus	PROFINET RT over Ethernet		
Ethernet	2 x 10 / 100 / 1000 Mbps (RJ45); teaming		
USB	Rear: 1 x USB 3.0, 2 x USB 2.0		Rear: 1 x USB 3.0, 3 x USB 2.0
Serial / parallel	1 x RS232 / RS485 / RS422 can be selected in BIOS		
Graphics interface	1 x DisplayPort		
Monitoring / diagnostics functions			
Basic functionality	Temperature; watchdog; HDD; CFast; SSD; CMOS battery (alarm locally by means of SIMATIC IPC DiagBase software)		
Advanced functions	System monitoring: Operating hours counter for preventive maintenance, maintenance mode, networking (LAN), SNMP and OPC interface (optionally by means of SIMATIC IPC DiagMonitor software)		
Remote access	–		
Ambient conditions			
Degree of protection / EMC	IP65 (front) / EN 55022A; EN 61000-6-4; EN 61000-6-2; FCC A		
Vibration during operation [5]	10 - 58 Hz: 0,0375 mm; 58 - 200 Hz: 9,8 m/s² (approx. 1 *g*) when operated with CFast / SSD		
Shock load during operation [6]	50 m/s²; 30 ms (approx. 5 *g*) when operated with CFast / SSD		
Relative humidity [8]	5 bis 85 % at 25 °C (no condensation)		
Ambient temperature in continuous operation at full processor performance	0 - 50 °C		
Certification / EU directives	CE; cULus (508); for Singletouch 7"/9"/12" [2] for Multitouch 12"/15"/19" available soon + WEEE / RoHS, C-Tick; ST: shipbuilding approvals		
Dimensions			
Operator panel (W x H) single-touch Operator panel (W x H) multitouch	214 x 158 mm	274 x 190 mm	330 x 241 mm 315 x 227 mm
Installation dimensions (W x H) single-touch Installation dimensions (W x H) multitouch	197 x 141 x 71 mm	251 x 166 x 71 mm	310 x 221 x 66 mm 299 x 211 x 76 mm
Article No.*)	**6AV7882-0A..0-...0**	**6AV7882-0B..0-...0**	**6AV7882-0C / 6AV7882-0H**

[1] MUI (multi-language user interface); 5 languages (ENG, GER, FR, SP, IT) [2] GL, LRS, BV, DNV, ABS, Class NK [3] Optionally with daylight display [4] Panel PC only

SIMATIC IPC277E		SIMATIC IPC377E
		
Panel PC, 15" Touch or Multitouch	**Panel PC, 19" Touch or Multitouch**	**Panel PC, 12", 15" or 19" Touch**
T (1,280 x800), MT (1,366 x 768)	(1,366 x 768)	12" (1,280 x 800); 15" and 19" (1,366 x 768)
Intel Celeron N2807 (2C / 2T, 1,58 (2.16) GHz, 1 MB cache, VT-x); Intel Celeron N2930 (4C / 4T, 1,83 (2.16) GHz, 2 MB cache, VT-x)		Intel Celeron Quad Core N3160 (4C / 4T, 1.6 GHz, up to 2.24 GHz, 2 MB cache)
2 GB, 4 GB or 8 GB; 512 KByte NVRAM optional		4 GB DDR3L-1600 (up to 8 GB supported) 4 GB, 8 GB, DDR3L - 1600
–		1 x mPCIe (half-size); mounting location for 1 x mSATA (full-size)
Windows Embedded Standard 7 (E / P), 32 Bit / 64 Bit; Windows 7 Ultimate, MUI [1], 32 Bit / 64 Bit; Windows 10 IoT Enterprise, 64 Bit, MUI		Windows 7 Ultimate (64 Bit) MUI [1] Windows 10 Enterprise LTSB 2016 (64 BIT) MUI
Packages with WinCC RT Advanced, WinCC V7 and WinAC RTX (F) / Bundles / Windows 10 Enterprise		Packages with WinCC V7; WinCC RT Advanced
DC 24 V; 20.4 - 28.8 V; isolated / max. 10 ms (according to NAMUR); On/Off switch		DC 24 V, 20.4 10 28.8 V / max. 10 ms
	up to 50,000 h [7]	up to 50,000 h; dimmable from 0 to 100%
CFast up to 16 GB (accessible from outside); SSD 240 / 480 GB; HDD 320 GB (IPC227E only)		HDD 500 GB
–		–
PROFINET RT over Ethernet		–
2 x 10 / 100 / 1000 Mbps (RJ45); teaming		2 x 10 / 100 / 1000 Mbps (RJ45); teaming capability
Rear: 1 x USB 3.0, 3 x USB 2.0; front: USB 2.0 (with single touch)		2 x USB 3.0; 2 x USB 2.0
1 x RS232 / RS485 / RS422 can be selected in BIOS		2 x RS232; 2 x RS232/485/422 selectable in BIOS
1 x DisplayPort		1 x DisplayPort, 1 x VGA
Temperature; watchdog; HDD; CFast; SSD; CMOS battery (alarm locally by means of SIMATIC IPC DiagBase software)		Front-LEDs for POWER and HDD
System monitoring: Operating hours counter for preventive maintenance, maintenance mode, networking (LAN), SNMP and OPC interface (optionally by means of SIMATIC IPC DiagMonitor software)		–
–		–
IP65 (front) / EN 55022A; EN 61000-6-4; EN 61000-6-2; FCC A		IP65 front, IP40 rear / protection class I acc. to IEC 61140
10 - 58 Hz: 0,0375 mm; 58 - 200 Hz: 9,8 m/s² (approx. 1 *g*) when operated with CFast / SSD		0.5 g, for wall mounting with HDD
50 m/s²; 30 ms (approx. 5 *g*) when operated with CFast / SSD		1 g, with HDD
5 bis 85 % at 25 °C (no condensation)		5 - 85% at 30 °C (no condensation)
0 - 45 °C		0 - 40 °C (with HDD)
CE; cULus (508); for Singletouch 7"/9"/12" [2] for Multitouch 12"/15"/19" available soon + WEEE / RoHS, C-Tick; ST: shipbuilding approvals		CE; cULus (UL 60950); KCC; EAC; FCC; BSMI (available soon)
415 x 310 mm 398 x 257 mm	483 x 337 mm 464 x 294 mm	12" (320 x 226 mm) / 15" (416,5 x 298 mm) / 19" (483 x 337 mm)
396 x 291 x 76 mm 382 x 241 x 76 mm	465 x 319 x 76 mm 448 x 278 x 76 mm	12" (302 x 208 x 89 mm) / 15" (388 x 240 x 89 mm) / 19" (455 x 279 x 89 mm)
6AV7882-0D / 6AV7882-0F	**6AV7882-0E / 6AV7882-0G**	**6AV7230-0.A20-.BA0**

[5] Tested according to: IEC 60068-2-6

[6] Tested according to: IEC 60068-2-27, IEC 60068-2-2

Technology overview

	SIMATIC Advanced HMI, PC-based:		
		SIMATIC IPC477E	
	 IP65	 IP65	IP65
General features	**Panel PC, 15" Touch or Multitouch**	**Panel PC, 19" Touch or Multitouch**	**Panel PC,**
Resolution in pixels (widescreen)	T (1,280 x 800), MT (1,366 x 768)	(1,366 x 768)	
Processor	Intel Celeron G3902E (2C / 2T, 1.6 GHz, 2 MB cache); Intel Core i3 6102E Intel Core i5-6442EQ (4C / 4T, 1.9 (2.7) GHz,6 MB cache); Intel Xeon Processor E3-1505L v5		
Main memory	4 GB, 8 GB or 16 GB; 512 KByte NVRAM optional		
Free expansion slots	up to 1 x PCIe card (optional); (1 x PCIe x 4); max. 6 W		
Operating systems (preinstalled and activated)	Windows Embedded Standard 7 (E / P), 32-bit / 64-bit; Windows 7 Ultimate, MUI [1], 64-bit; Windows		
Packages / bundles	Packages with WinCC RT V7, WinCC RT Professional, WinCC RT Advanced, SIMATIC Software		
Power supply / temporary voltage interruption	DC 24 V, 19,2 - 28,8 V; isolated / max. 20 ms (according to NAMUR); or 100–240 V AC,		
MTBF backlighting	up to 80,000 h [7]; dimmable from 0 bis 100 %	up to 50,000 h [7]; dimmable from 0 bis 100 %	
Drives			
Mass storage	CFast up to 30 GB (accessible from outside); SSD 240 / 480 GB; HDD 320 GB		
Optical drives	can be connected by means of ext. drive via USB		
Interfaces			
Fieldbus	PROFINET RT over Ethernet		
Ethernet	3 x 10 / 100 / 1000 Mbps (RJ45); teaming capability		
USB	Rear: 4 x USB 3.0; front: 1 x USB 3.0 (for single-touch)		
Serial / parallel	2 x RS232 / RS485 / RS422 can be selected in BIOS, optional		
Graphics interface	2 x DisplayPort		
Monitoring / diagnostics functions			
Basic functionality	Temperature; watchdog; HDD; CFast; SSD; CMOS battery (alarm locally by means of SIMATIC IPC DiagBase software)		
Advanced functions	System monitoring: Operating hours counter for preventive maintenance, maintenance mode, networking (LAN), SNMP and OPC interface (optionally by means of SIMATIC IPC DiagMonitor software)		
Remote access	Remote access over Intel AMT for Core i7 and over SIMATIC IPC Remote Manager		
Ambient conditions			
Degree of protection / EMC	IP65 (front) according to IEC 60529 / EN 61000-6-4; CISPR220 Class B; FCC Class A;		
Vibration during operation [5]	5 - 9 Hz: 3.5 mm; 9 - 500 Hz: 9.8 m/s² (approx. 1 *g*) when operated with CFast / SSD		
Shock load during operation [6]	50 m/s²; 30 ms (approx. 5 *g*) when operated with CFast / SSD		
Relative humidity [8]	up to 85% at 30 °C (no condensation)		
Ambient temperature in continuous operation at full processor performance	0 - 50 °C	0 - 45 °C	
Certification / EU directives	CE; cULus (508); WEEE / RoHS; C-Tick		
Dimensions			
Operator panel (W x H) single-touch Operator panel (W x H) multitouch	415 x 310 mm 398 x 257 mm	483 x 337 mm 464 x 294 mm	
Installation dimensions (W x H) single-touch Installation dimensions (W x H) multitouch	395 x 290 x 83 mm 382 x 241 x 83 mm	464 x 318 x 83 mm 448 x 278 x 83 mm	
Article No.*)	**6AV7241-.B / 6AV7241-.J**	**6AV7241-.D / 6AV7241-.K**	

[7] with 24h continuous operation; depending on temperature

[8] Tested according to IEC 60068-2-78, IEC 60068-2-30, IEC 60068-2-56

	SIMATIC IPC677D
	
22" Touch or Multitouch and 24" Multitouch	Panel PC, 15", 19" or 22" Touch or Multitouch
(1,920 x 1,080)	15" T (1,280 x 800); 15" MT (1,366 x 768); 19" (1,366 x 768); 22" (1,920 x 1,080)
(2C / 4T, 1.90 GHz, 3 MB cache); (4C / 8T, 2.0 (2.8) GHz, 8 MB cache)	Intel Xeon E3-1268L v3 (4C / 8T; 2,3 (3,3) GHz; 8 MB Cache; VT-d; AMT 9.0); Core i3-4330TE (2C / 4T; 2,4 GHz; 4 MB Cache; VT-x); Celeron G1820TE (2C / 2T; 2,2 GHz; 2 MB Cache)
	From 2 GB DDR3-1600 SDRAM; 2 x DIMM; configurable up to 16 GB; ECC optional; non-volatile memory: NVRAM 2 MB optional
	2 x PCI (240 mm) or 1 x PCIe x 16 (185 mm), 1 x PCI (185 mm) or 1 x PCIe x 16 (185 mm), 1 x PCIe x 4 (185 mm)
10 IoT Enterprise; LTSB2016	Windows 7 Ultimate (32 / 64 Bit) MUI [1]; Windows 10 IoT Enterprise (64-bit) MUI; Windows Embedded Standard 7 P (32 Bit); released for S7-1500 Software Controller, suited for Linux
Controller	Packages with WinCC V7; WinCC RT Advanced; WinCC RT Professional and WinAC RTX (F)
50/60 Hz; on-off switch	AC: 100–240 V; 50 – 60 Hz / max. 20 ms (according to NAMUR); 24 V DC: 20.4 - 28.8 V
up to 30,000 h [7]; dimmable from 0 bis 100 %	up to 50,000 h
	Internal installation: 250 GB 3.5” or 500 GB 3.5”; SSD 240 GB plus optional HDD 320 GB RAID1: 2 x 320 GB 2.5”
	DVD ± R / RW / -DL / -RAM
	1 x 12 Mbps (isolated; CP 5622) optional
	2 x Intel: 10 / 100 / 1000 Mbps (RJ45); teaming; 1 x Intel: 10 / 100 / 1000 Mbps for PROFINET IRT variant
	4 x USB 3.0; 1 x USB 3.0 on front (with single-touch)
	1 x COM1
	1 x DVI-D / 1 x DisplayPort
	Temperature; fan; watchdog; HDD; RAID; SSD; CMOS battery (alarm locally by means of SIMATIC IPC DiagBase software)
	Temperature; fan; watchdog; hard disks (SMART) System/Ethernet monitoring; operating hours counter; communication over Ethernet; SNMP and OPC interface (optionally by means of SIMATIC IPC DiagMonitor software)
	Remote access over Intel Active Management Technology (iAMT) 9.0 and SIMATIC IPC Remote Manager
IP20 (rear)	IP65 front; IP20 elsewhere
	10 - 58 Hz: 0.075 mm; 58 - 500 Hz; 9.8 m/s² (approx. 1 *g*)
	50 m/s²; 30 ms (approx. 5 *g*)
	5 - 80% at 25 °C (no condensation)
	5 - 45 °C (maximum configuration)
	IEC/EN/DIN EN 60950-1; CE for industrial sector; cULus according to UL 508
22" (560 x 380 mm) / 22" (529 x 331 mm) / 24" (585 x 363 mm)	15" Touch: 415 x 310 mm; 15" Multitouch: 416 x 298 mm; 19": 483 x 337 mm; 22": 560 x 380 mm
22" (542 x 360 x 83 mm) / 22" (513 x 315 x 83 mm) / 24" (569 x 347 x 83 mm)	15" Touch: 395 x 290 x 112 mm; 15" Multitouch: 398 x 279 x 112 mm; 19": 464 x 318 x 112 mm; 22": 541 x 361 x 112 mm
6AV7241-.E / 6AV7241-.L / 6AV7241-.R (MT)	**6AV7260-**

[9] According to EN 60068-2-6 and DNV Shipbuilding Approval Vibration Class A [10] in heating mode

Technology overview

	SIMATIC Industrie-Monitore and Thin Clients	
	SIMATIC Industrial Thin Client	**SIMATIC Industrial Flat Panel**
		
General features	**12" Touch; 15", 19", 22" Touch / Multitouch**	**12" Touch, 15" Touch or Multitouch**
Resolution in pixels (widescreen)	12" T (1,280 x 800) 15" T / MT (1,280 x 800 / 1,366 x 768) 19" T and MT (1,366 x 768) 22" T and MT (1,920 x 1,080)	12" T (1,280 x 800) 15" T (1,280 x 800) 15" MT (1,920 x 1,080)
Max. distance to PC	Unlimited over Ethernet	12" Standard: 5 m 15" Standard: 5 m; Extended: 30 m
Processor	Intel Celeron (1,2 GHz)	–
Operating system (preinstalled and activated) / supported protocols	Closed Linux / VNC; SINUMERIK; WinCC-OA; web browser; JAVA; CITRIX Client	–
Power supply / max. power consumption	12": DC 24 V / approx. 28 W 15": DC 24 V / approx. 36 W 19": DC 24 V / approx. 32 W 22": DC 24 V / approx. 53 W	24 V DC; 19.2 - 28.8 V, approx. 40 W; 100–240 V AC, 50 / 60 Hz optional
MTBF background lighting	up to 50,000 h[7)]; dimmable from 0 to 100%	12" up to 50,000 h[7)]; dimmable from 10 to 100%; 15" up to 80,000 h[7)]; dimmable from 0 to 100%
Interfaces		
Ethernet	2 x 10 / 100 / 1000 Mbps (RJ45)	–
USB	Rear: 2 x USB 2.0 / for Multitouch 4 x USB 2.0	For Extended version: 2 x USB 2.0 (rear)
Graphics interface	–	1 x DVI-D; 1 x DisplayPort (partially 1 Ethernet and 1 x DisplayPort)
Ambient conditions		
Degree of protection / EMC	IP65 (front); CE; EN 61000-6-4	IP65 (front); CE; EN 61000-6-4; EN 61000-6-2
Vibration during operation [5)]	10 - 58 Hz: 0,0375 mm; 58 - 200 Hz: 9,8 m/s² (1 *g*)	10 - 58 Hz: 0,0375 mm; 58 - 200 Hz: 9,8 m/s² (1 *g*)
Shock load during operation [6)]	50 m/s² (5 *g*); 30 ms	150 m/s² (approx. 15 *g*); 11 ms
Relative humidity [8)]	5 - 85% at 25 °C (no condensation)	95% at 25 °C (no condensation)
Ambient temperature during continuous operation	0 - 50 °C (12" / 15") 0 - 45 °C (19" / 22")	0 - 50 °C (partially up to 45 °C)
Certification / EU directives	CE; cULus; C-Tick; KCC; FM	CE; cULus / cULus Hazardous Location; partially or optional: ATEX, RCM, marine, Ex, KC
Dimensions		
Operator panel (W x H) Single-touch (ST) Multitouch (MT))	12": 330 x 241 mm 15": 415 x 310 mm (ST) / 398 x 257 mm (MT) 19": 483 x 337 mm (ST) / 464 x 294 mm (MT) 22": 560 x 380 mm (ST) / 529 x 331 mm (MT)	12": 330 x 241 mm (ST) 15": 416 x 298 mm (ST) 15": 398 x 257 mm (MT)
Installation dimensions (W x H x D) Single-touch (ST) Multitouch (MT)	12": 310 x 221 x 82 mm 15": 396 x 291 x 75 mm (ST) / 382 x 241 x 75 mm (MT) 19": 465 x 319 x 75 mm (ST) / 448 x 278 x 75 mm (MT) 22": 542 x 362 x 75 mm (ST) / 513 x 315 x 75 mm (MT)	12": 308 x 219 x 71,1 mm (ST) 15": 399 x 291 x 63 mm (ST) 15": 382 x 241 x 63 mm (MT)
Article No.*)	**6AV6646-1A...-0AX0 / 6AV6646-1B...-0NA0 / PRO 19" and 22" 6AV6646-1B...**	**6AV7466-1T...; 6AV7863-2T.../-2M...**

PROtected, INOX and Ex devices see: siemens.com/special-hmi-devices

SIMATIC Industrial Flat Panel

19" and 22" Touch or Multitouch
19" T (1,366 x 768) 19" MT (1,920 x 1,080) 22" T (1,920 x 1,080) 22" MT (1,920 x 1,080)
Standard: 5 m Extended: 30 m as Ethernet monitor: unlimited
–
–
24 V DC; 19.2 - 28.8 V, approx. 40 W; 100–240 V AC, 50 / 60 Hz optional
up to 80.000 h [7]; dimmable from 0 bis 100 %
–
For Extended version: 2 x USB 2.0 (rear)
1 x DVI-D; 1 x DisplayPort (partially 1 Ethernet and 1 x DisplayPort)
IP65 (front); CE; EN 61000-6-4; EN 61000-6-2
10 - 58 Hz: 0,0375 mm; 58 - 200 Hz: 9,8 m/s² (1 *g*)
150 m/s² (approx. 15 *g*); 11 ms
95% at 25 °C (no condensation)
0 - 50 °C (partially up to 45 °C)
CE; cULus / cULus Hazardous Location; partially or optional: ATEX, RCM, marine, Ex, KC
19": 483 x 337 mm (ST) 19": 464 x 294 mm (MT) 22": 560 x 380 mm (ST) 22": 529 x 331 mm (MT)
19": 465 x 319 x 63 mm (ST) 19": 448 x 278 x 63 mm (MT) 22": 542 x 362 x 63 mm (ST) 22": 513 x 315 x 63 mm (MT)
6AV7863-3T.../-3M...; -4T.../-4M...

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Machine-based visualization with SIMATIC HMI

- **Efficient in engineering**
- **Innovative in design and operation**
- **Brilliant HMI operator devices**
- **Protection – with certainty**
- **Rapid commissioning**
- **Openness with PC-based**

SIMATIC HMI – All info!

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