



HMIs and industrial PCs

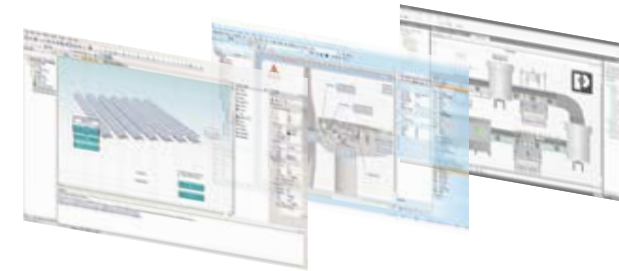
Product overview

HMIs and industrial PCs

HMIs (Human Machine Interfaces) and industrial PCs are essential to the efficient operation and monitoring of your systems and machines. From the mobile tablet PC for field operation to complex visualization concepts for extensive automation systems – you'll find the right solution for your application within the Phoenix Contact product portfolio.

Software for operation and monitoring

Efficient automation with the right visualization for every area of application.



HMIs

Human Machine Interfaces provide cost-effective automation based on efficient input and monitoring. Phoenix Contact offers devices for Visu+ software and for HTML5 applications, as well as robust operator and display panels for use on ships with the necessary approvals.

HMIs and IPCs for harsh ambient conditions

Robust HMIs and IPCs are designed to endure various weather conditions, with IP67-protected front, sunlight readable displays, and extended temperature ranges.

IPCs

Industrial PCs combine the computing power of modern processors with the robustness and reliability of industrial components. They are also available with ATEX/IECEX certification specifically for use in potentially explosive areas.

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Find out more with the web code

For detailed information, use the web codes provided in this brochure. Simply enter # and the four-digit number in the search field on our website.

i Web code: #1234 (example)

Or use the direct link:
phoenixcontact.net/webcode/#1234

HMI and IPCs

Design, quality, service

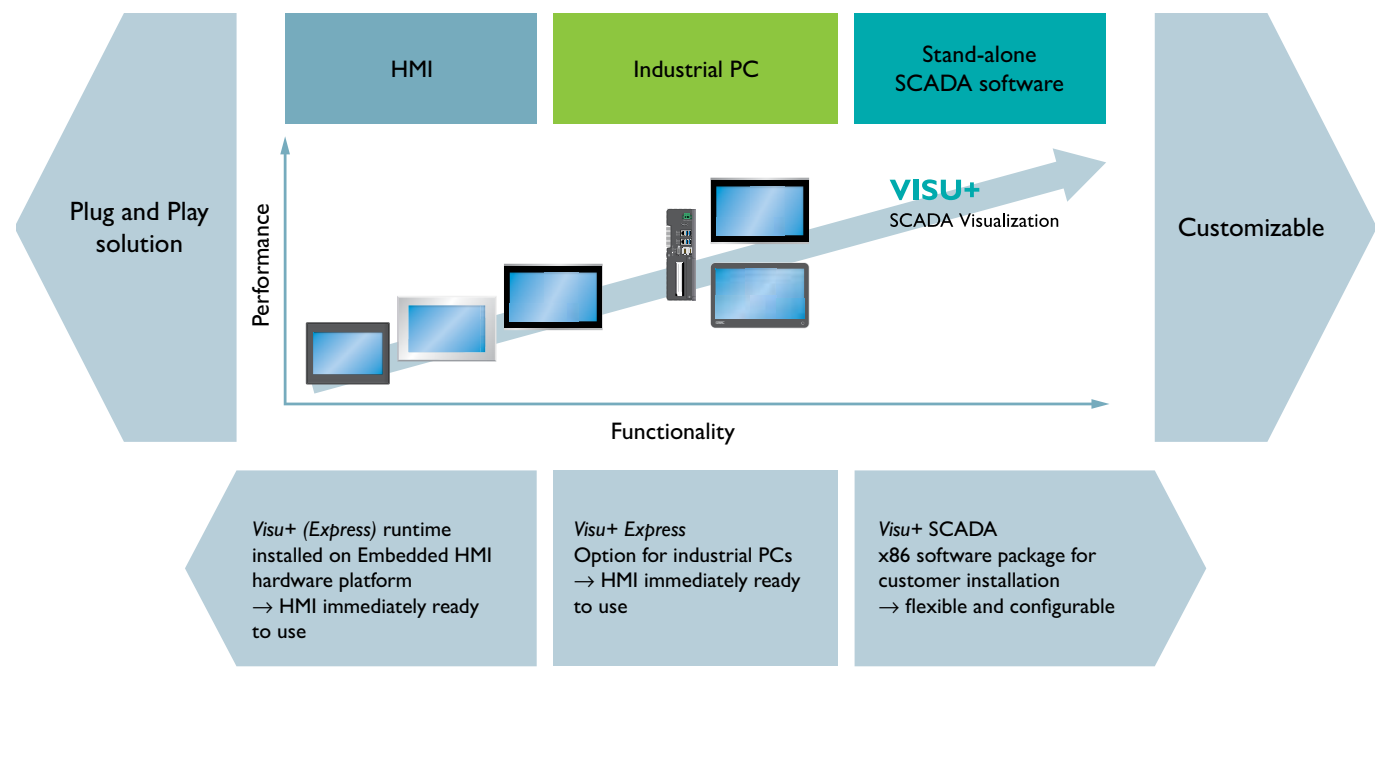
Are you looking for intelligent solutions for the operation and monitoring of machines and systems? Phoenix Contact offers a wide range of robust and reliable technology, from HMIs and powerful industrial PCs to custom solutions for special industrial requirements. We will provide you with an impressive package that delivers exceptional design, quality, and service.

Design
Our HMIs and industrial PCs offer an attractive and intuitive product design. Compact and functional, they can be incorporated seamlessly into your system or machine design.

Quality
Made by Phoenix Contact – you can rely on our promise of quality. We put great emphasis on producing durable components that meet industry standards and quality requirements.

Service
From product selection to retrofitting existing systems, benefit from our comprehensive range of services. We also have a solution for your specific automation tasks.

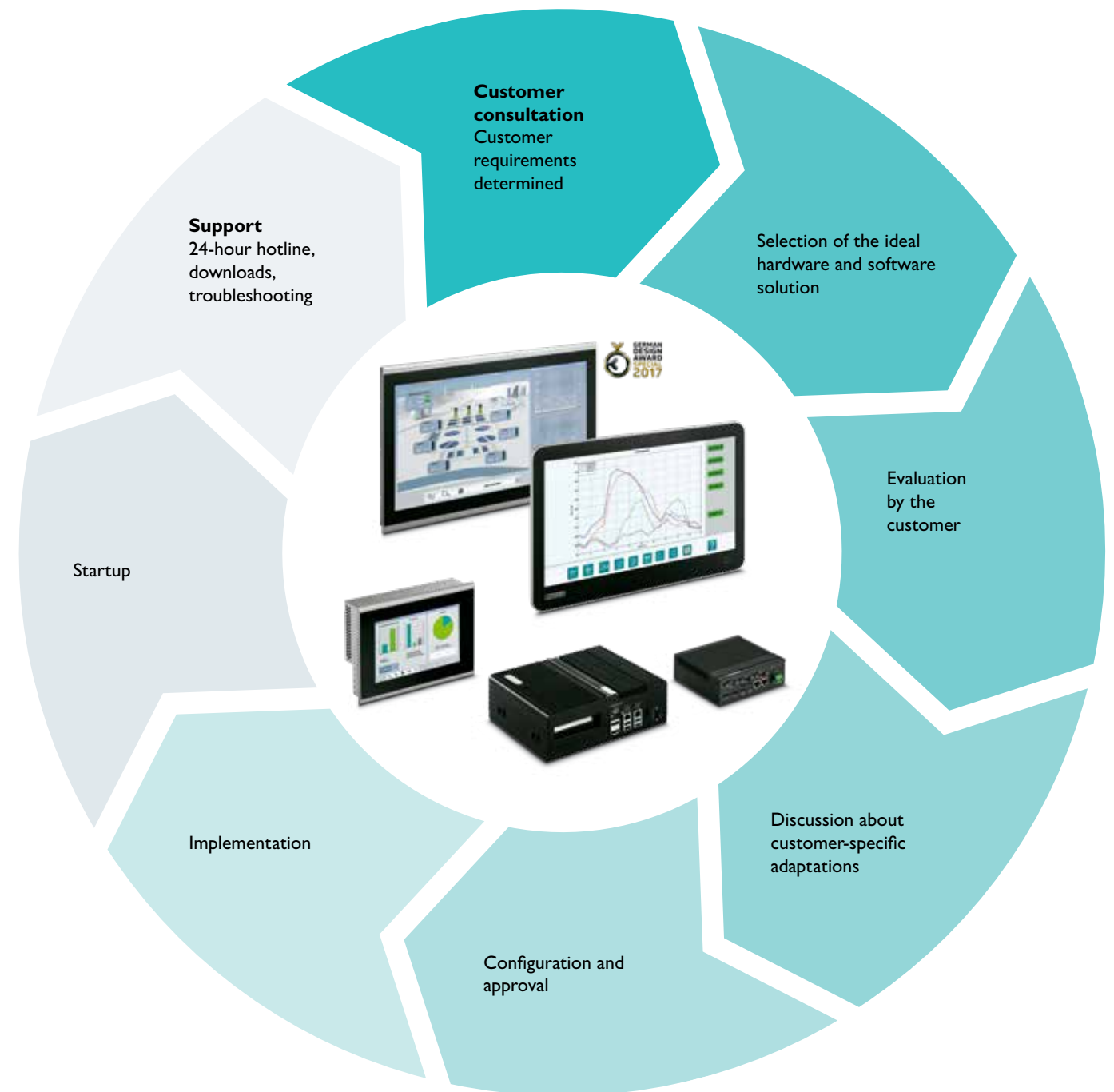
Benefit from the scalability of our hardware and software portfolio – from simple operating concepts on HMIs through to industry-specific and graphic-intensive visualization concepts running on PC platforms. We offer the right solution to meet your needs.



Everything from a single source

The entire development process for our hardware and software solutions takes place in-house. Based on our wide range of standard products, we develop modular and custom solutions in accordance with specific customer requirements. The result:

high-performance, customer-specific products that are used in a wide variety of applications.

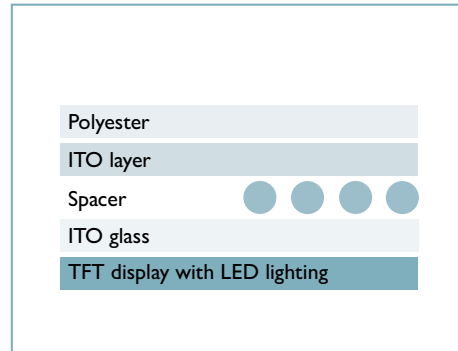


Touch technologies

Ideal for industrial applications

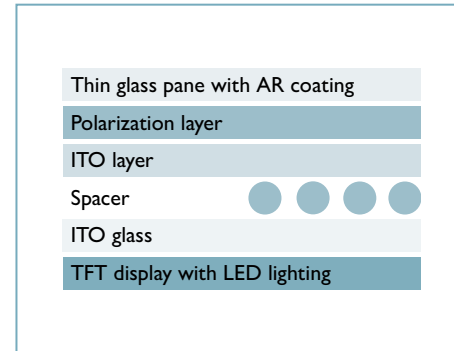
The touch screen is a popular control element that invokes a reaction from the system by touching a special surface. The touch interface has quickly evolved and surpassed simple analog resistive interfaces to meet the ever-changing demands of customers and applications. Phoenix Contact understands

these changing environments, and offers a number of touch technologies to fully address the demands of both operators and environments.



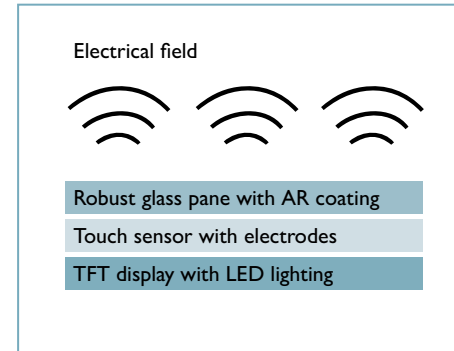
Analog resistive touch screen (polyester)

An analog resistive touch screen consists of two polyester plates that lie on top of each other and are coated with semiconductor indium tin oxide (ITO). Spacers are used to create a gap between the plates that is filled with air. When pressure is applied to the top plate with a finger or another object, the two semiconductor coatings make contact.



Glass-film-glass touch screen (GFG)

The GFG touch combines proven, pressure-based analog resistive touch technology with a high-quality glass design. The surface is not polyester film, but rather a thin, resistant glass pane which also serves as a moisture barrier. As such, the GFG touch is particularly suited for harsh ambient conditions. It can be operated with fingers, even when wearing gloves, or with stylus pens, without causing damage.



Projective capacitive touch screen (PCAP)

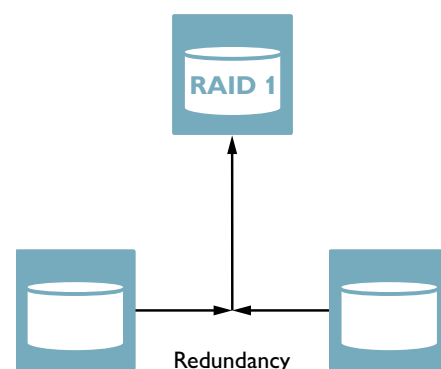
A transparent ITO layer underneath the glass cover consisting of touch sensors projects a uniform electrical field that changes when touched. The touch controller localizes the coordinates of the touch points with high precision. Even the use of thicker glass and operation when wearing gloves are no problem. Hardened glass is very robust and durable when it comes to aggressive substances. The operator panels support multi-touch functions and gesture control.

RAID support

A RAID (Redundant Array of Independent Disks) system combines multiple hard disks which enable increased data security. There are different types of memory models (levels); Phoenix Contact uses the RAID 1 system for its VL2 box and panel PCs.

RAID level 1

The RAID 1 system enables information to be stored redundantly on two hard disks. If one data memory fails, the information on the second data memory is automatically used.



Our added value



Multi-touch

There is a sensor pattern for projective capacitive touch screens (PCAP). Changes in the electrical field are evaluated individually in each part of the pattern. This enables multi-touch functions and gesture control.



Cost savings

Phoenix Contact offers cost-effective alternatives for operation and monitoring in the field wherever a panel PC is not required.



Readability in sunlight

Anti-reflective (AR) coatings are used to reduce disruptive light reflections on display surfaces.



Service-friendly

In the event that maintenance is required, certain components of the device are accessible without the need for tools.



Cockpit

Administration and configuration made easy. Everything required for HMI setup and operation is consolidated at a single location.



HTML5

The web standard, providing all options for HMI projects in combination with CSS and JavaScript.



Fanless

Carefully selected components and a sophisticated passive cooling system enable a completely fanless operation. This increases device reliability, decreases dust contamination, and reduces noise.



Remote access

The Visu+ mobile visualization app or the HTML5 web server integrated in the runtime enable convenient use of your visualization on a smartphone or tablet. SCADA functions such as trend display or alarm handling are also available on mobile end devices.



SSL encryption

Secure communication with SSL-encrypted data transmission.



Remote monitoring

To bridge larger distances between the processing unit and operator interface or to implement cost-effective multi-access operation, we offer the right solution in the form of the KVM extender or Portico software.



Extended temperature range

This refers to the ambient temperature in which the device will be permanently operated. Special components are often used for systems that are designated for an extended temperature range from -30°C to +70°C.



IP67 protection class

Equipped with a dustproof and waterproof computer housing for the most stringent HMI and IPC demands.

HMI

A wide range of operating concepts

Perfectly tailor your operating concept to your machine or system. Our comprehensive portfolio provides appropriate HMI devices for all visualization requirements. Whether located directly on site or centrally in the control center – benefit from our many years of automation expertise.



Visualization software for every application

Whether in the central control room, in production, or directly on the machine, efficient automation requires the right visualization. Benefit from our extensive portfolio covering all aspects of operation and monitoring.

PLCnext Engineer
Engineering Software

VISU+
SCADA Visualization



HMI for basic requirements

- Resistive touch
- Display sizes ranging from 4.3" to 10.1" in 16:9 format
- HMI variants for Visu+ or with integrated HTML5-compatible browser
- Phoenix Contact PLCs, third-party controllers, and other popular devices with built-in web servers are supported

For further information, refer to pages 14 and 18



HMI for standard requirements

- Resistive or PCAP touch
- Display sizes ranging from 4.3" to 18.5" in 4:3 and 16:9 format
- HMI sizes for Visu+, or with integrated HTML5-compatible browser, for operation with PLCnext controllers
- Phoenix Contact PLCs, third-party controllers, and other popular devices with built-in web servers are supported

For further information, refer to pages 15, 19, 20, and 21



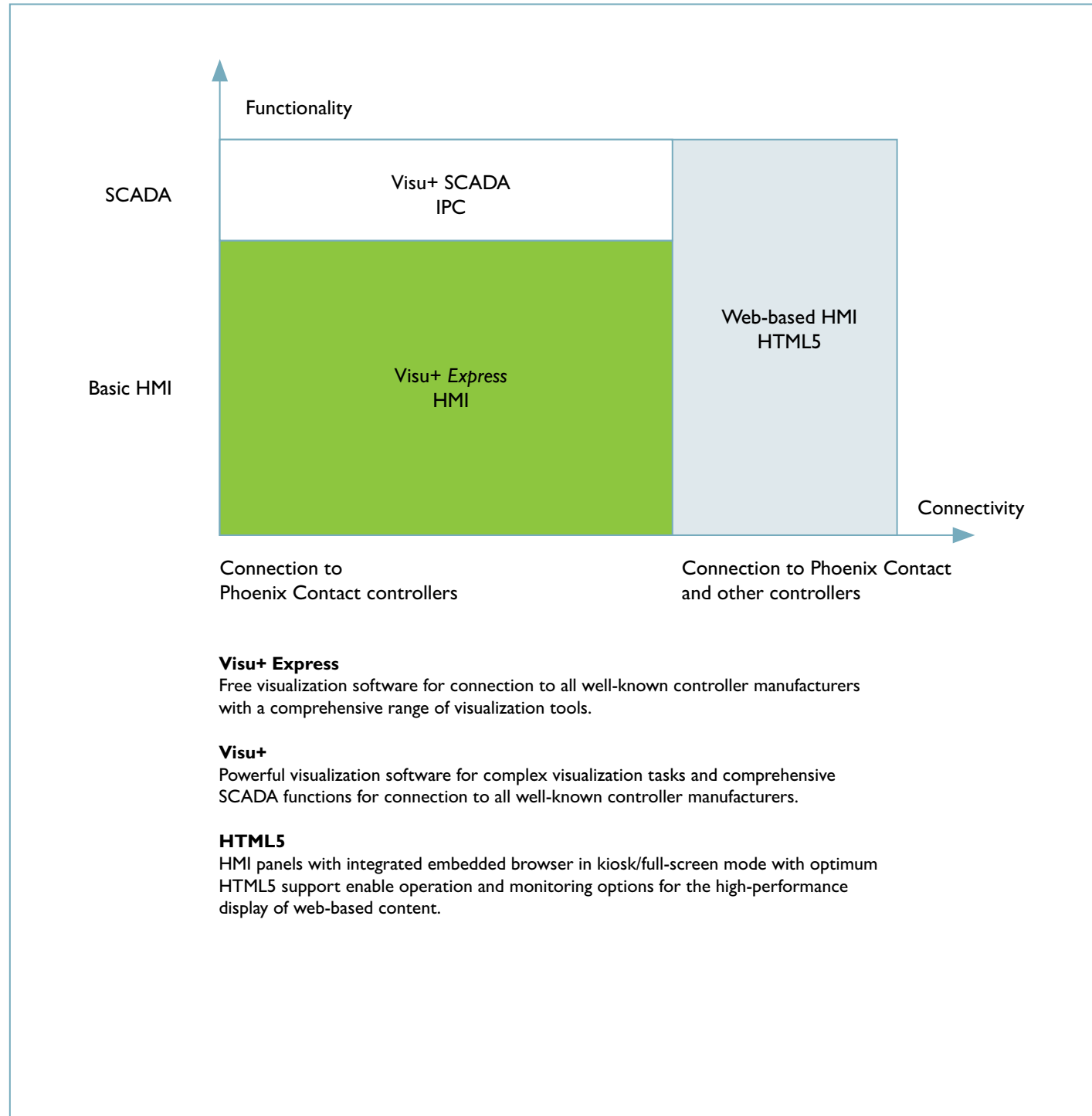
HMI for special industrial requirements

- Resistive touch
- Display sizes ranging from 5.7" to 15" in 4:3 and 16:9 format
- Industry-specific characteristics and special approvals
- With integrated Visu+ runtime
- Phoenix Contact PLCs and popular third-party controllers supported

For further information, refer to pages 23 and 43

Selection guide for HMIs

Efficient automation hinges on the right visualization. Our HMI selection guide presents the criteria and devices that will help you create a customized solution to perfectly suit your application requirements.



Step 1: Visualization as the basis for selecting an HMI

The requirements for the user interface, functionality, and system coupling determine which visualization system is appropriate and which particular HMI type should be selected.

- The user interface aspect refers to the graphical options for designing an interface
- The functionality aspect indicates the software's operation and monitoring functions

- The system coupling aspect refers to communication and integration in control systems

Step 2: Assess the resource requirements based on the scope of the application

The user-friendliness of a device depends on the application configuration. By contrast, the response and display refresh time (operating efficiency) is primarily based on the complexity of the visualization application. The operating

efficiency is influenced by various factors. For example, the CPU performance, number of data points, and design of the visualization significantly influence the response and display refresh time of an HMI. Please take these factors into consideration

when selecting the HMI performance class.

Step 3: Select the right device

Based on their features (CPU capacity, display resolution, and memory capacity) as well as their suitability for different

applications, the individual device families can be divided into three classes: basic (BWP 2000, BTP 2000), standard

(WP 4000, TP 3000), and high-end applications (IPC). Select the right operator panel according to your requirements.

		HMI for HTML5		HMI for Visu+		Industrial PC	
		BWP 2000	WP 4000	BTP 2000	TP 3000	IPC	
Page		14	15	20	21	26	
Visualization	Runtime on HMI panel			●	●	●	
	Web-based	●	●			●	
Connection to control systems	Phoenix Contact	PLCnext Control	○	●	○	●	
		Axioline (AXC)	○	●	●	●	
		Inline (ILC)	○	○	●	●	●
	Other	PLC logic			●	○	
		OPC UA	●	●	●	●	●
		Third-party manufacturer	●	●	●	●	●
		Multi-driver PLC communication		●	○	●	●
CODESYS	○	●			●		
Remote data access (RDA)	○	○	○	●	●		
Touch technology/ interface	Resistive touch (polyester)	●	○	●	●	●	
	Resistive touch (glass-film-glass)				●	●	
	PCAP touch		●		●	●	
Hardware	Metal housing		●		●	●	
	Plastic housing	●		●			
Environmental influences and approvals	Extended temperature range				●	●	
	Display can be read in direct sunlight				●	●	
	UL (Ordinary/Hazardous Location)	●/–	●/●	●/–	●/●	●/●	
	ATEX II & IECEx II					●	
	Maritime approvals				○		
Cost-effective display and design	●		●		○		

● Best option

HMIs with open web browser for HTML5-based visualizations

Integrate both machine and system flexibly using HTML5 web technology. Our operator panels with open browsers allow you to display the web-based visualization of your system without any restrictions. Among other HTML5 visualization tools, you will also find an optimally coordinated system with PLCnext Engineer and our HMIs.

Your advantages

- ✓ Flexible with open web standards and free choice of HTML5 web servers and visualization software
- ✓ No runtime license costs
- ✓ Independent visualization with self-programmed JavaScript applications
- ✓ Flexible operation and monitoring that is not dependent on location and time – visualization can also be accessed and controlled via smartphone or tablet PC

PLCnext Engineer

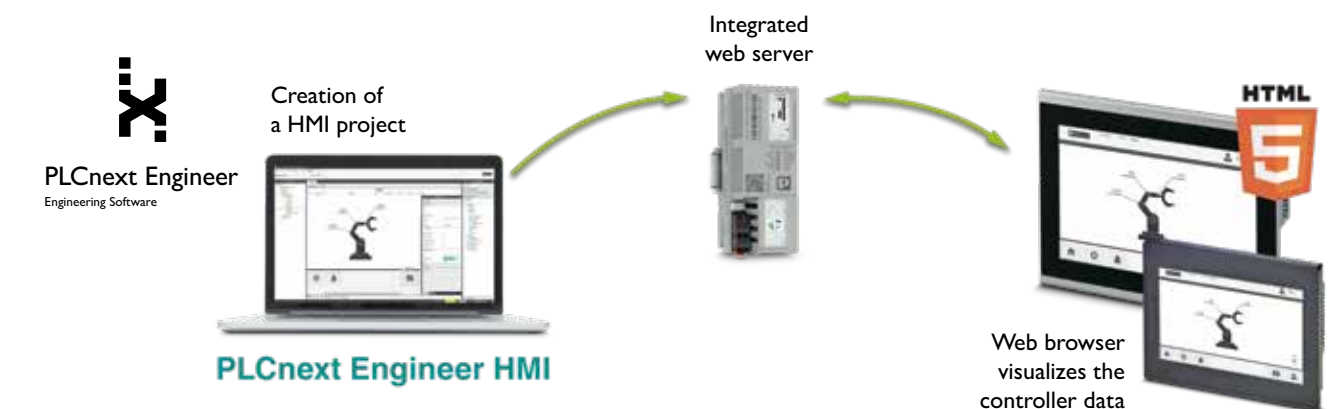
PLCnext Engineer software is optimized for the creation of modern visualization solutions. With respect to the technology, the visualization integrated into PLCnext Engineer is based on open standards such as HTML5 and JavaScript. No web skills are required, since the software offers numerous symbols and templates, which can be individually extended.

- Programming and visualization for the new generation of Phoenix Contact controllers
- End-to-end engineering: configuration, programming, visualization, and diagnostics
- Comprehensive symbol libraries that can be extended and reused as often as required

- Free download and licensed add-ins available at phoenixcontact.com

Further information on controllers compatible with PLCnext Engineer available at:

i Web code: #2310



HTML5 web panels

General technical data

- Display type: TFT
- CPU: Arm® Cortex®-A9, 1 GHz
- Memory: 1 GB RAM, 4 GB eMMC Flash
- Interfaces: 1 x Ethernet (10/100 Mbps), 1 x USB Host 2.0
- Operating system: Linux Yocto
- Operating temperature: 0°C to +50°C
- Storage temperature: -20°C to +85°C
- Relative humidity: 10% to 95%, non-condensing
- Housing: plastic
- Degree of protection: IP66 (front), IP20 (back)
- Power supply: 24 V DC ±15%
- Installation type: landscape
- Mounting type: front installation
- Approvals: UL/cUL, Class 1 Div 2

Your advantages

- ✓ HTML5-compatible browser integrated in all devices
- ✓ Easy startup: just enter the IP address and URL
- ✓ No security updates required for Java or Flash plug-ins
- ✓ Energy efficient LED backlight
- ✓ Best price/performance ratio

HTML5 web panels

General technical data

- Display type: TFT
- CPU: Arm® Cortex®-A53, 4 x 1.2 GHz
- Memory: 1 GB RAM, 8 GB eMMC Flash
- Interfaces: 1 x Ethernet (10/100 Mbps), 2 x USB Host 2.0, 1 x µSD
- Operating system: Linux Yocto
- Operating temperature: 0°C to +50°C
- Storage temperature: -25°C to +70°C
- Relative humidity: 20% to 85%, non-condensing
- Housing: aluminum/sheet steel, zinc-plated
- Degree of protection: IP65 (front), IP20 (back)
- Power supply: 24 V DC ±20%
- Installation type: portrait/landscape
- Mounting type: front installation
- Approvals: UL/cUL, NEMA 1 (polyester), NEMA 4 (PCAP)

Your advantages

- ✓ Flexible with open web standards and free choice of HTML5 web servers and visualization software
- ✓ No security updates required for Java or Flash plug-ins
- ✓ Ideal for use with PLCnext Engineer or CODESYS V3
- ✓ Secure communication with SSL-encrypted data transmission

Web panels with open browser for simple HTML5 applications



Designation	BWP 2043W	BWP 2070W	BWP 2102W
Order No.	1060549	1060632	1060630
Display size (in cm)	10.92 (4.3")	17.78 (7")	25.9 (10.2")
Touch technology	Analog resistive (polyester)		
Colors	16.7 million		
Resolution (W x H in pixels)	480 x 272 (WQVGA)	800 x 480 (WVGA)	1024 x 600 (WSVGA)
Brightness (in cd/m²)	400	350	
Backlight MTBF (in h)	20,000	25,000	
Reading angle (left / right / top / bottom in °)	70 / 70 / 50 / 70		65 / 65 / 45 / 65
Front plate dimensions (W x H x D in mm)	120 x 89 x 5	186 x 138 x 5	268 x 190 x 5
Mounting cutout (W x H in mm)	111 x 80	175 x 127	256 x 178
Installation depth (in mm)	31.5	31	33
Weight (in kg)	0.2	0.4	0.9
Current consumption (in A)	0.22	0.25	0.35
Connected load (in W)	5.3	6	8.4

Web panels with open browser for HTML5 applications



Designation	WP 4070-WVRS	WP 4070-WXPS	WP 4101-WXPS	WP 4120-WXPS	WP 4156-WHPS	WP 4185-WHPS
Order No.	1148694	1148693	1148687	1148689	1148691	1148690
Display size (in cm)	17.78 (7")		25.65 (10.1")	30.73 (12.1")	39.6 (15.6")	47 (18.5")
Touch technology	Analog resistive (polyester)	Projective capacitive (PCAP)				
Colors	262,144	16.7 million				
Resolution (W x H in pixels)	800 x 480 (WVGA)	1280 x 800 (WXGA)			1366 x 768 (WXGA)	
Brightness (in cd/m²)	350	500	850	380	320	240
Backlight MTBF (in h)	40,000	50,000			70,000	50,000
Reading angle (left / right / top / bottom in °)	70 / 70 / 65 / 65	85 / 85 / 85 / 85			80 / 80 / 80 / 80	85 / 85 / 80 / 80
Front plate dimensions (W x H x D in mm)	203 x 147 x 5	185.5 x 146.2 x 6	262.7 x 199.3 x 6	302 x 229 x 6	436 x 278 x 6	485 x 329 x 8
Mounting cutout (W x H in mm)	195 x 139	175 x 136	252 x 189	292 x 219	425 x 260	475 x 311
Installation depth (in mm)	43	45			53	
Weight (in kg)	0.8		1.3	1.7	4	5.5
Current consumption (in A)	0.4		0.6	0.7	1	1.2
Connected load (in W)	9.6		14.4	16.8	24	28.8

HMI with Visu+ software Scalable for demanding applications

Visu+ is the visualization software for all areas of application concerning the monitoring and control of systems, available in full and Express versions. This software, with SCADA functionality, is suitable for every application, from a compact touch panel to an industrial PC.

Use Visu+ software to design complex interfaces for operation and monitoring. Benefit from flexible connection to a wide range of third-party systems.



Visu+ / Visu+ Express

Visualizations with SCADA functions deliver impressive scalability and versatility. Monitor and operate complex machines, systems, or automated processes with Visu+.

- Creation of graphically sophisticated user interfaces
- Connection to numerous control systems, such as Siemens S7 1xxxx (TIA configured), CODESYS, Beckhoff, Wago, OPC UA, CANopen (J1939)
- App for accessing the application via mobile end devices
- The license for the runtime environment is already included in the price of HMI devices

Visu+ Express:

- Free Express version
- Scope of functions optimized for typical HMI requirements
- Supports all touch panel and select IPC configurations

Visu+:

- SCADA scope of functions
- Supports all touch panel and IPCs

Try the free Visu+ Express development license today. Visit the Phoenix Contact website and search for part number 2402774.



VISU+

SCADA Visualization



Touch panels for Visu+ applications

General technical data

- Display type: TFT
- CPU: ARM®9 i.MX28, 454 MHz
- Memory: 128 MB RAM, 512 MB Flash
- Interfaces: 1 x Ethernet (10/100 Mbps), 1 x USB Host 2.0, 1 x µSD, 1 x µUSB device, 2 x COM (RS-232/RS-422/RS-485)
- Operating system: Windows CE 6.0
- Operating temperature: 0°C to +50°C
- Storage temperature: -20°C to +85°C
- Relative humidity: 10% to 95%, non-condensing
- Housing: plastic
- Degree of protection: IP66 (front), IP20 (back)
- Power supply: 24 V DC ±15%
- Installation type: portrait/landscape
- Mounting type: front installation
- Approvals: UL/cUL, Class 1 Div 2

Your advantages

- ✓ Visu+ RT integrated as standard in all devices
- ✓ Manufacturer-independent connection to numerous control systems with a wide variety of drivers
- ✓ Developed for simple applications with an attractive price/performance ratio
- ✓ Mobile system access optionally available with the Visu+ mobile app or HTML5 web client

Touch panels with polyester touch



Designation	BTP 2043W	BTP 2070W	BTP 2102W
Order No.	1050387	1046666	1046667
Display size (in cm)	10.92 (4.3")	17.78 (7")	25.9 (10.2")
Touch technology	Analog resistive (polyester)		
Colors	262,144		
Resolution (W x H in pixels)	480 x 272 (WQVGA)	800 x 480 (WVGA)	
Brightness (in cd/m²)	400	300	350
Backlight MTBF (in h)	20,000		
Reading angle (left / right / top / bottom in °)	70 / 70 / 50 / 70		65 / 65 / 45 / 65
Front plate dimensions (W x H x D in mm)	120 x 89 x 5	186 x 138 x 5	268 x 190 x 5
Mounting cutout (W x H in mm)	111 x 80	175 x 127	256 x 178
Installation depth (in mm)	31.5	31	33
Weight (in kg)	0.2	0.4	0.9
Current consumption (in A)	0.17	0.4	0.3
Connected load (in W)	4.1	9.6	7.2

Touch panels for Visu+ applications

General technical data

- Display type: TFT
- CPU: Arm® Cortex®-A8, 1 GHz, real-time clock (battery-backed)
- Memory: 512 MB SDRAM, 1 MB SRAM, 1 GB Flash
- Interfaces: 1 x Ethernet (10/100 Mbps), 2 x USB Host 2.0, 1 x SD
- Serial interfaces (optional): 1 x COM (RS-232), 1 x COM (RS-422/RS-485) (electrically isolated)
- Fieldbus interfaces (optional): 2 x CAN (electrically isolated)
- Operating system: MS Windows® Embedded Compact 7
- Operating temperature: 0°C to +50°C
- Storage temperature: -25°C to +70°C
- Relative humidity: 20% to 85%, non-condensing
- Housing: aluminum/sheet steel, zinc-plated
- Degree of protection: IP65 (front), IP20 (back)
- Power supply: 24 V DC ±20%
- Installation type: portrait/landscape
- Mounting type: front installation
- Approvals: UL/cUL, Class 1 Div 2, NEMA 4X

Your advantages

- ✓ Robust and sturdy with glass front suitable for industrial use
- ✓ Visu+ RT integrated as standard in all devices
- ✓ Manufacturer-independent connection to numerous control systems with a wide variety of drivers
- ✓ Powerful processor with fast response and display refresh time
- ✓ Mobile system access optionally available with the Visu+ mobile app or HTML5 web client

Touch panels with PCAP touch



Designation	TP 3070W/P	TP 3090W/P	TP 3120W/P	TP 3156W/P	TP 3185W/P
Order No.	2403459	2403460	2403461	2403462	2403862
Display size (in cm)	17.78 (7")	22.86 (9")	30.73 (12.1")	39.62 (15.6")	47.02 (18.5")
Touch technology	Projective capacitive (PCAP)				
Colors	16.77 million		65,535		
Resolution (W x H in pixels)	800 x 480 (WVGA)		1280 x 800 (WXGA)	1366 x 768 (WXGA)	
Brightness (in cd/m²)	400	800	320		240
Backlight MTTF (in h)	50,000	70,000	50,000	70,000	50,000
Reading angle (left / right / top / bottom in °)	70 / 70 / 60 / 60	85 / 85 / 85 / 85	88 / 88 / 88 / 88	80 / 80 / 80 / 80	85 / 85 / 80 / 80
Front plate dimensions (W x H x D in mm)	208 x 148.5 x 6	271 x 179.2 x 6	336 x 234 x 6	436 x 278 x 6	485 x 329 x 6
Mounting cutout (W x H in mm)	198 x 138	261 x 169	326 x 224	425 x 260	475 x 311
Installation depth (in mm) incl. fieldbus interface	53 80				
Weight (in kg)	1.3	1.8	2.7	4	5.6
Current consumption (in A)	0.4	0.8		1	1.2
Connected load (in W)	9.6	19.2		24	28.8

Touch panels for Visu+ applications

General technical data

- Display type: TFT
- CPU: Arm® Cortex®-A8, 800 MHz, real-time clock (battery-backed)
- Memory: 512 SDRAM, 1 GB Flash
- Interfaces: 1 x Ethernet (10/100 Mbps), 2 x USB Host 2.0, 1 x SD
- Serial interfaces (optional): 1 x COM (RS-232), 1 x COM (RS-422/RS-485) (electrically isolated)
- Fieldbus interfaces (optional): 2 x CAN (electrically isolated)
- Operating system: MS Windows® Embedded Compact 7
- Operating temperature: 0°C to +50°C
- Storage temperature: -25°C to +70°C
- Relative humidity: 20% to 85%, non-condensing
- Housing: aluminum/sheet steel, zinc-plated
- Degree of protection: IP65 (front), IP20 (back)
- Power supply: 24 V DC ±20%
- Installation type: portrait/landscape
- Mounting type: front installation
- Approvals: UL/cUL, Class 1 Div 2, NEMA 4X

Your advantages

- ✓ Visu+ RT integrated as standard in all devices
- ✓ Manufacturer-independent connection to numerous control systems with a wide variety of drivers
- ✓ Mobile system access optionally available with Visu+ mobile app
- ✓ Easy installation, low installation depth, and compact design
- ✓ Audible warning from alarms via integrated buzzer (85 dB)

Touch panels with polyester touch



Designation	TP 3043W	TP 3057V	TP 3070W	TP 3090W
Order No.	2402629	2400453	2400454	2402630
Display size (in cm)	10.92 (4.3")	14.48 (5.7")	17.78 (7")	22.86 (9")
Touch technology	Analog resistive (polyester)			
Colors	262,144		16.7 million	
Resolution (W x H in pixels)	480 x 272 (WQVGA)	640 x 480 (VGA)	800 x 480 (WVGA)	
Brightness (in cd/m²)	385	400	350	800
Backlight MTTF (in h)	40,000			70,000
Reading angle (left / right / top / bottom in °)	75 / 75 / 63 / 75	65 / 65 / 55 / 52	70 / 70 / 65 / 65	85 / 85 / 85 / 85
Front plate dimensions (W x H x D in mm)	140 x 100 x 5	168 x 126 x 5	203 x 147 x 5	260 x 172 x 5
Mounting cutout (W x H in mm)	132 x 92	160 x 118	195 x 139	252 x 164
Installation depth (in mm) incl. fieldbus interface	42 71		54 59	
Weight (in kg)	0.55	0.8		1.3
Current consumption (in A)	0.2	0.3		0.7
Connected load (in W)	4.8	7.2		16.8

Touch panels with polyester touch



Designation	TP 3105S	TP 3121S	TP 3120W	TP 3150S	TP 3154W
Order No.	2400455	2400456	2400457	2400458	2402631
Display size (in cm)	26.42 (10.4")	30.73 (12.1")		38.1 (15")	39.1 (15.4")
Touch technology	Analog resistive (polyester)				
Colors	262,144		65,535		
Resolution (W x H in pixels)	800 x 600 (SVGA)		1280 x 800 (WXGA)	1024 x 768 (XGA)	1280 x 800 (WXGA)
Brightness (in cd/m²)	340	360	320	480	360
Backlight MTTF (in h)	50,000				
Reading angle (left / right / top / bottom in °)	70 / 70 / 50 / 60	80 / 80 / 60 / 80	88 / 88 / 88 / 88	80 / 80 / 65 / 80	80 / 80 / 70 / 70
Front plate dimensions (W x H x D in mm)	295 x 220 x 5	340 x 270 x 5	330 x 225 x 5	400 x 329 x 5	420 x 297 x 5
Mounting cutout (W x H in mm)	287 x 212	313 x 243	322 x 217	372 x 301	396 x 273
Installation depth (in mm) incl. fieldbus interface	54 59	55 60	48 53	55 60	59 64
Weight (in kg)	1.9	2.2	1.7	3	3.3
Current consumption (in A)	0.5		0.7		0.8
Connected load (in W)	12		16.8		19.2

HMI for maritime applications

Safety on the high seas

For demanding use on ships, Phoenix Contact offers robust operator and display panels that are specifically tailored to the requirements of maritime applications. The Visu+ based touch panels for maritime applications have all the relevant approvals. They ensure user-friendly and reliable operation, monitoring, and alarm generation while at sea.

Touch panels for use on ships

General technical data

- Display type: TFT
- CPU: Arm® Cortex®-A8, 1 GHz, real-time clock (battery-backed)
- Memory: 512 SDRAM, 1 MB SRAM, 1 GB Flash
- Interfaces: 1 x Ethernet (10/100 Mbps), 2 x USB Host 2.0, 1 x SD
- Serial interfaces (optional): 1 x COM (RS-232), 1 x COM (RS-485) / 1 x COM (RS-232), 1 x COM (RS-485), 2 x CAN / 2 x CAN
- Operating system: MS Windows® Embedded Compact 7
- Operating temperature: 0°C to +55°C (silv), -20°C to +60°C (bk)
- Storage temperature: -25°C to +70°C (silv), -30°C to +80°C (bk)
- Relative humidity: 20% to 85%, non-condensing
- Housing: aluminum/sheet steel, zinc-plated
- Degree of protection: IP65 (front), IP20 (back)
- Power supply: 24 V DC ±20%
- Installation type: portrait/landscape
- Mounting type: front installation
- Approvals: UL/cUL, ABS, BV, DNV-GL, LR, KR, RINA, EN 60945

Your advantages

- ✓ Visu+ RT integrated as standard in all devices
- ✓ Light-absorbing front plates
- ✓ Dimmable backlight
- ✓ Certification in accordance with ABS, BV, DNV-GL, LR, KR, RINA
- ✓ Certified compass safe distance in accordance with DIN EN 60945
- ✓ No additional audible signaling devices required with integrated buzzer (85 dB)
- ✓ Manufacturer-independent connection to numerous control systems with a wide variety of drivers



Maritime touch panels in two versions



Designation	TPM 3057	TPM 3070	TPM 3105	TPM 3120	TPM 3150
Order No.	2404517	2404518	2404520	2404522	2404524
Display size (in cm)	14.48 (5.7")	17.78 (7")	26.42 (10.4")	30.73 (12.1")	38.1 (15")
Touch technology	Analog resistive (polyester)				
Colors	262,144			65,535	
Resolution (W x H in pixels)	640 x 480 (VGA)	800 x 480 (WVGA)	800 x 600 (SVGA)	1280 x 800 (WXGA)	1024 x 768 (XGA)
Brightness (in cd/m²)	400	350	340	320	480
Backlight MTTF (in h)	40,000			50,000	
Reading angle (left / right / top / bottom in °)	65 / 65 / 55 / 52	70 / 70 / 65 / 65	70 / 70 / 50 / 60	88 / 88 / 88 / 88	80 / 80 / 65 / 80
Front plate dimensions (W x H x D in mm)	silv: 168 x 126 x 5 bk: 168 x 147 x 5	silv: 203 x 147 x 5 bk: 203 x 165 x 5	silv: 295 x 220 x 5 bk: 328 x 265 x 5	silv: 330 x 225 x 5 bk: 336 x 252 x 5	silv: 400 x 329 x 5 bk: 400 x 338 x 5
Mounting cutout (W x H in mm)	silv: 160 x 118 bk: 160 x 139	silv: 195 x 139 bk: 195 x 157	silv: 287 x 212 bk: 302 x 237	silv: 322 x 217 bk: 310 x 226	silv: 372 x 301 bk: 373 x 312
Installation depth (in mm) incl. fieldbus interface	silv: 42; bk: 49 silv: 71; bk: 75	silv: 42; bk: 42 silv: 71; bk: 71	silv: 54; bk: 58 -	silv: 48; bk: 54 -	silv: 55; bk: 63 -
Weight (in kg)	silv: 0.8; bk: 1.0	silv: 0.8; bk: 1.15	silv: 1.9; bk: 2.2	silv: 1.7; bk: 2.3	silv: 3.0; bk: 3.6
Current consumption (in A)	0.3		0.5	0.7	0.7
Connected load (in W)	7.2		12	16.8	16.8



Industrial PCs

Specialists for virtually any application

As the interface between man and machine or as a central system controller – industrial PCs are an essential component in industrial applications. In addition to box PCs, the Phoenix Contact portfolio includes powerful panel and tablet PCs as well as devices for special industrial requirements. Enjoy the benefits of a robust and configurable solution for collecting and processing, measuring, controlling, and visualizing your data.



Box PCs

- Optimum performance suited to every application with Intel® Celeron™ through Core™ processors
- Passive cooling and no moving parts
- Access to all important components without the use of tools
- Easy connection to existing I/O devices via serial interfaces

For further information, refer to pages 26 to 29



Touch monitors

- Display sizes ranging from 12" to 21.5" in 4:3 or 16:9 format
- Analog resistive or PCAP touch
- High shock resistance and electromagnetic compatibility
- Optional front USB
- Easy VESA 100 mounting

For further information, refer to page 38



Panel PCs

- Optimum performance suited to every application with Intel® Atom™ through Core™ processors
- Display sizes ranging from 7" to 24" in 4:3 or 16:9 format
- Analog resistive or PCAP touch
- Passive cooling and no moving parts

For further information, refer to pages 30 to 37



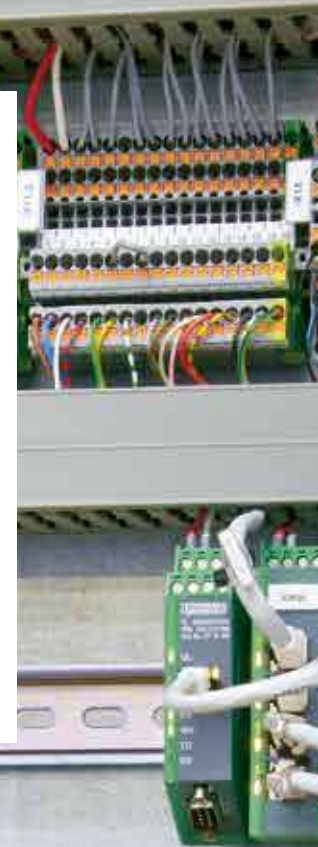
Industry-specific PCs

- Display sizes ranging from 7" to 21.5" in 4:3 or 16:9 format
- Extended temperature range
- Resistant to UV and IR radiation and other environmental influences such as salt spray
- Passive cooling and no moving parts

For further information, refer to pages 44 to 49

Box PCs

Box PCs are designed to work in a variety of applications, such as image processing, visualization, control, or regulation tasks. Their various mounting options and scalable performance make box PCs the ideal solution for machine building and systems manufacturing. Compact, service-friendly, and powerful – perfect for managing demanding tasks directly in the control cabinet.



Box PCs






General technical data

- Ethernet interfaces: 2 x (10/100/1000 Mbps), RJ45, Intel® i210
- Operating systems (configurable): Windows 7 or Windows 10 IoT Enterprise
- Housing: sheet steel/aluminum
- Degree of protection: IP30
- Power supply: 24 V DC ±20%
- Mounting type: wall or bookshelf mounting
- Approvals: UL/cUL, Class 1 Div 2

Your advantages

- ✓ Passive cooling and no moving parts
- ✓ Service-friendly with easily accessible components
- ✓ Maximum operational safety with thermal insulation of data memory and CPU
- ✓ Individually configurable

VL2 series box PCs

					
Designation	VL2 BPC 1000	VL2 BPC 2000	VL2 BPC 3000	VL2 BPC 7000	VL2 BPC 9000
Order No.	2403046	2400332	2400492	2400333	2400499
CPU	Intel® Atom™ E3845 1.91 GHz (quad-core)	Intel® Celeron® N2930 1.83 GHz (quad-core)	Intel® Core™ i3-4010U 1.7 GHz (dual-core)	Intel® Core™ i5-4300U 1.9 GHz (dual-core)	Intel® Core™ i7-6822EQ 2 GHz (quad-core)
Cooling	Passive				Convection booster
RAM (configurable)	max. 4 GB DDR3	max. 8 GB DDR3	max. 16 GB DDR3		max. 32GB DDR4
Data memory (configurable)	SD, HDD or SSD	HDD or SSD			
Number of slots	1	2			
RAID support (configurable)	–		0/1		
USB	2 x USB 2.0, 1 x USB 3.0	4 x USB 2.0	2 x USB 2.0, 2 x USB 3.0		
Serial interfaces	1 x COM (RS-232/RS-422/RS-485) Optional: 1 x COM (RS-232) + 1 x COM (RS-485), 2 x CAN	1 x COM (RS-232/RS-422/RS-485) Optional: 2 x COM (RS-232) + 1 x COM (RS-232/RS-422/RS-485)			
Video output	1 x DisplayPort	2 x DisplayPort			
Graphics processor	Intel® HD Graphics		Intel® HD Graphics 4400	Intel® HD Graphics 530	
PCI/PCIe slots (configurable)	–	1 x PCI or 1 x PCIe			
Dimensions (W x H x D in mm)	271 x 211 x 65	264 x 215 x 95			
Weight (in kg)	2.4	4.2	4.8		
Current consumption (in A)	0.9	1.4	1.7	1.8	1.6
Connected load (in W)	21.6	37.4	41.3	42.7	38.9
Operating temperature	HDD: 0°C to +45°C SSD: 0°C to +50°C	HDD: 0°C to +45°C SSD: -20°C to +65°C		HDD: 0°C to +45°C SSD: -10°C to +65°C	HDD: 0°C to +45°C SSD: -20°C to +60°C
Storage temperature	-25°C to +70°C	-40°C to +70°C			
Relative humidity	20% to 85%, non-condensing	5% to 95%, non-condensing			

Box PCs

General technical data

- Ethernet interfaces: 2 x (10/100/1000 Mbps), RJ45, Intel i210-AT
- Operating system: Windows® 10 IoT Enterprise
- Operating temperature: 0°C to +50°C
- Storage temperature: -40°C to +70°C
- Relative humidity: 5% to 95%, non-condensing
- Housing: sheet steel/aluminum
- Degree of protection: IP20
- Power supply: 24 V DC ±20%
- Mounting type: wall or DIN rail mounting
- Approvals: UL/cUL

Your advantages

- ✓ Passive cooling and no moving parts
- ✓ Easy connection to existing I/O devices via serial interfaces
- ✓ Compact design in high-quality metal housing
- ✓ Individually configurable
- ✓ 7th generation processors
- ✓ Windows 10 IoT support

BL2 series box PCs



Designation	BL2 BPC 1000	BL2 BPC 2000	BL2 BPC 7000
Order No.	2404777	2404844	1016240
CPU	Intel® Celeron® N3350 1.1/2.4 GHz (dual-core)	Intel® Pentium® N4200 1.1/2.5 GHz (quad-core)	Intel® Core™ i5-7442EQ 2.1/2.9 GHz (quad-core)
Cooling	Passive		Convection booster
RAM (configurable)	max. 4 GB DDR3L	max. 8 GB DDR3L	max. 16 GB DDR3L
Data memory (configurable)	M.2 SSD		
Number of slots	1		
USB	2 x USB 2.0, 2 x USB 3.0		
Serial interfaces	1 x COM (RS-232/RS-422/RS-485), 2 x COM (RS-232)		
Video output	2 x DisplayPort		
Graphics processor	Intel® HD Graphics 500	Intel® HD Graphics 505	Intel® HD Graphics 630
PCI/PCIe slots (configurable)	1 x Mini PCIe 802.11 a/b/g/n WLAN		
Dimensions (W x H x D in mm)	162 x 146 x 49		186 x 146 x 49
Weight (in kg)	1.5		2
Max. current consumption (in A)	1.1	1.4	1.8
Connected load (in W)	25.7	34.6	43.9

Box PCs

General technical data

- Ethernet interfaces: 2 x (10/100/1000 Mbps), RJ45, Intel i210-IT
- Operating systems (configurable): Windows® 7 or Windows® 10 IoT Enterprise
- Operating temperature: 0°C to +50°C
- Storage temperature: -40°C to +70°C
- Relative humidity: 10% to 90%, non-condensing
- Housing: sheet steel/aluminum
- Degree of protection: IP20
- Power supply: 24 V DC ±20%
- Mounting type: wall or DIN rail mounting
- Approvals: UL/cUL

Your advantages

- ✓ Passive cooling and no moving parts
- ✓ Compact design in high-quality metal housing
- ✓ Individually configurable
- ✓ 6th generation processors
- ✓ Windows 10 IoT and Windows 7 support

BL2 series box PCs



Designation	BL2 BPC 1100	BL2 BPC 2100	BL2 BPC 3100	BL2 BPC 7100	BL2 BPC 9100
Order No.	1105772	1105773	1105776	1105777	1105778
CPU	Intel® Celeron® N3350 1.1/2.4 GHz (dual-core)	Intel® Pentium® N4200 1.1/2.5 GHz (quad-core)	Intel® Core™ i3-6100U 2.3 GHz (dual-core)	Intel® Core™ i5-6300U 3.0 GHz (dual-core)	Intel® Core™ i7-6600U 3.4 GHz (dual-core)
Cooling	Passive				
RAM (configurable)	max. 4 GB		max. 8 GB		
Data memory (configurable)	M.2 SSD	M.2 SSD, 2.5" SSD or HDD			
Number of slots	-				
USB	2 x USB 2.0, 2 x USB 3.0				
Serial interfaces	1 x COM (RS-232/RS-422/RS-485), 2 x COM (RS-232)				
Video output	2 x DisplayPort				
Graphics processor	Intel® HD Graphics 500	Intel® HD Graphics 505	Intel® HD Graphics 520	Intel® HD Graphics 630	Intel® HD Graphics 520
PCI/PCIe slots (configurable)	1 x Mini PCIe				
Dimensions (W x H x D in mm)	185 x 131 x 54		247 x 145 x 54		
Weight (in kg)	1.4		1.5		
Max. current consumption (in A)	1.07	1.44	1.83	1.92	1.97
Connected load (in W)	25.7	34.6	43.9	46.08	47.28

Panel PCs

Intuitive operating concepts are of utmost importance in machines and systems. Benefit from the intelligent combination of an IPC and touch monitor with the VL2 panel PCs with IP66-protected front. Providing appropriate control, operation, and monitoring, these panel PCs are equipped with the Visu+ software and functions that include trending, alarming, data logging, and reporting.



Panel PCs

General technical data

- Display type: TFT
- Colors: 16.7 million
- Ethernet interfaces: 2 x (10/100/1000 Mbps), RJ45, Intel i210
- Operating systems (configurable): Windows® 7 or Windows® 10 IOT Enterprise
- Operating temperature: HDD: 0°C to +45°C
SSD: 0°C to +50°C
- Storage temperature: -25°C to +70°C
- Relative humidity: 20% to 85%, non-condensing
- Housing: aluminum/sheet steel, zinc-plated
- Degree of protection: IP66 (front), IP20 (back)
- Power supply: 24 V DC ±20%
- Mounting type: front installation
- Approvals: UL/cUL, Class 1 Div 2, NEMA 4

Your advantages

- ✓ Passive cooling and no moving parts
- ✓ Projective capacitive or analog resistive touch screens for various areas of application
- ✓ Individually configurable
- ✓ Ideal for high-end visualization

VL2 series panel PCs



Designation	VL2 PPC7 1000	VL2 PPC9 1000	VL2 PPC12 1000
Order No.	2403708	2403709	2403710
Display size (in cm)	17.8 (7")	22.9 (9")	30.7 (12.1")
Touch technology (configurable)	Projective capacitive (PCAP) / analog resistive (polyester)		
Resolution (W x H in pixels)	800 x 480 (WVGA)		1280 x 800 (WXGA)
Brightness (in cd/m²)	350	400	320
Backlight MTTF (in h)	40,000	70,000	50,000
Reading angle (left / right / top / bottom in °)	70 / 70 / 60 / 60	85 / 85 / 85 / 85	88 / 88 / 88 / 88
CPU	Intel® Atom™ E3845 4 x 1.91 GHz (quad-core)		
Cooling	Passive		
RAM (configurable)	max. 4 GB DDR3L		
Data memory (configurable)	SSD		
Number of slots	1		
USB	2 x USB 2.0, 1 x USB 3.0		
Serial interfaces	1 x COM (RS-232/RS-422/RS-485), optional: 1 x COM (RS-232) + 1 x COM (RS-485), 2 x CAN		
Video output	1 x DisplayPort		
Graphics processor	Intel® HD Graphics		
Dimensions incl. front plate (W x H x D in mm) incl. optional interfaces	208 x 148.5 x 88 / 203 x 147 x 87 D: 111 / 110	271 x 179 x 88 / 260 x 172 x 87 D: 111 / 110	336 x 234 x 88 / 330 x 225 x 87 D: 111 / 110
Mounting cutout (W x H in mm)	198 x 138 / 195 x 139	261 x 169 / 252 x 164	326 x 224 / 322 x 217
Weight (in kg)	2.3	2.6	3.3
Current consumption (in A)	1.1 / 0.8	1.4 / 1.1	1.4 / 1.0
Power consumption (in W)	26.4 / 19.2	33.6 / 26.4	33.6 / 24

Panel PCs

General technical data

- Display type: TFT
- Colors: 16.7 million
- Ethernet interfaces: 2 x (10/100/1000 Mbps), RJ45, Intel i210
- Operating systems (configurable): Windows® 7 or Windows® 10 IoT Enterprise
- Operating temperature: HDD: 0°C to +45°C, SSD: -10°C to +60°C
- Storage temperature: -40°C to +70°C
- Relative humidity: 5% to 95%, non-condensing
- Housing: aluminum/sheet steel, zinc-plated
- Degree of protection: IP66 (front), IP30 (back)
- Power supply: 24 V DC ±20%
- Mounting type: front installation
- Approvals: UL/cUL, Class 1 Div 2, NEMA 4

Your advantages

- ✓ Passive cooling and no moving parts
- ✓ Maximum operational safety with thermal insulation of data memory and CPU
- ✓ Access to all important components without the use of tools
- ✓ Easily removable, rotating, or solid-state drives in various sizes
- ✓ Individually configurable

VL2 series panel PCs



Designation	VL2 PPC 1000	VL2 PPC 2000	VL2 PPC 3000
Order No.	2403047	2400334	2400498
Display size (in cm)	39.6 (15.6")/47 (18.5")/54.6 (21.5")		
Touch technology	Projective capacitive (PCAP)		
Resolution (W x H in pixels)	1366 x 768 (HD)/1366 x 768 (HD)/1920 x 1080 (Full HD)		
Brightness (in cd/m²)	400/300/300		
Backlight MTTF (in h)	50,000		
Reading angle (left / right / top / bottom in °)	Depends on the configuration		
CPU	Intel® Atom™ E3845 4 x 1.91 GHz (quad-core)	Intel® Celeron® N2930 1.83 GHz / 2.16 GHz	Intel® Core™ i3-4010U 1.7 GHz (dual-core)
Cooling	Passive		
RAM (configurable)	max. 4 GB DDR3L	max. 8 GB DDR3	max. 16 GB DDR3
Data memory (configurable)	HDD or SSD	HDD or SSD, RAID support 0/1	
Number of slots	1	2	
USB	2 x USB 2.0, 1 x USB 3.0	4 x USB 2.0	2 x USB 2.0, 2 x USB 3.0
Serial interfaces	1 x COM (RS-232/RS-422/RS-485), optional: 1 x COM (RS-232) + 1 x COM (RS-485), 2 x CAN	1 x COM (RS-232/RS-422/RS-485), optional: 2 x COM (RS-232) + 1 x COM (RS-232/RS-422/RS-485)	
Video output	1 x DisplayPort	2 x DisplayPort	
Graphics processor	Intel® HD Graphics		Intel® HD Graphics 4400
PCI/PCIe slots (configurable)	-	1 x PCI or 1 x PCIe	
Dimensions incl. front plate (W x H x D in mm) incl. optional interfaces	408 x 275 x 100 / 465 x 313 x 102 / 532 x 354 x 99	408 x 275 x 121 / 465 x 313 x 123 / 532 x 354 x 119	
Mounting cutout (W x H in mm)	394 x 263/455 x 303/522 x 344		
Weight (in kg)	6.3 / 8.1 / 10.4	8.6/10.4/12.7	
Max. current consumption (in A)	Depends on the configuration		
Connected load (in W)	Depends on the configuration		

VL2 series panel PCs



Designation	VL2 PPC 7000	VL2 PPC 9000
Order No.	2400346	2400500
Display size (in cm)	39.6 (15.6")/47 (18.5")/54.6 (21.5")	
Touch technology	Projective capacitive (PCAP)	
Resolution (W x H in pixels)	1366 x 768 (HD)/1366 x 768 (HD)/1920 x 1080 (Full HD)	
Brightness (in cd/m²)	400/300/300	
Backlight MTTF (in h)	50,000	
Reading angle (left / right / top / bottom in °)	Depends on the configuration	
CPU	Intel® Core™ i5-4300U 1.9 GHz (dual-core)	Intel® Core™ i7-6822EQ 2 GHz (quad-core)
Cooling	Passive	Convection booster
RAM (configurable)	max. 16 GB DDR3	max. 32GB DDR 4
Data memory (configurable)	HDD or SSD, RAID support 0/1	
Number of slots	2	
USB	2 x USB 2.0, 2 x USB 3.0	
Serial interfaces	1 x COM (RS-232/RS-422/RS-485), optional: 2 x COM (RS-232) + 1 x COM (RS-232/RS-422/RS-485)	
Video output	2 x DisplayPort	
Graphics processor	Intel® HD Graphics 4400	Intel® HD Graphics 530
PCI/PCIe slots (configurable)	1 x PCI or 1 x PCIe	
Dimensions incl. front plate (W x H x D in mm)	408 x 275 x 121/465 x 313 x 123/532 x 354 x 119	
Mounting cutout (W x H in mm)	394 x 263/455 x 303/522 x 344	
Weight (in kg)	8.6/10.4/12.7	
Current consumption (in A)	Depends on the configuration	
Connected load (in W)	Depends on the configuration	

Panel PCs

General technical data

- Display type: TFT
- Colors: 16.2 million
- Ethernet interfaces: 2 x (10/100/1000 Mbps), RJ45, Intel i210-AT
- Operating system: Windows® 10 IoT Enterprise
- Operating temperature: 0°C to +50°C
- Storage temperature: -40°C to +70°C
- Relative humidity: 5% to 95%, non-condensing
- Housing: sheet steel/aluminum
- Degree of protection: IP65 (front), IP20 (back)
- Power supply: 24 V DC ±20%
- Mounting type: front installation
- Approvals: UL/cUL

Your advantages

- ✓ Passive cooling and no moving parts
- ✓ Easy connection to existing I/O devices via serial interfaces
- ✓ Individually configurable
- ✓ 7th generation processors
- ✓ Windows 10 IoT support

Panel PCs

General technical data

- Display type: TFT
- Colors: 16.2 million
- Ethernet interfaces: 2 x (10/100/1000 Mbps), RJ45, Intel i210-AT
- Operating systems (configurable): Windows® 7 or Windows® 10 IoT Enterprise
- Operating temperature: 0°C to +50°C
- Storage temperature: -40°C to +70°C
- Relative humidity: 10% to 90%, non-condensing
- Housing: sheet steel/aluminum
- Degree of protection: IP65 (front), IP20 (back)
- Power supply: 24 V DC ±20%
- Mounting type: front installation
- Approvals: UL/cUL

Your advantages

- ✓ Passive cooling and no moving parts
- ✓ Easy connection to existing I/O devices via serial interfaces
- ✓ PCAP multi-touch
- ✓ Individually configurable
- ✓ 6th generation processors
- ✓ Windows 10 IoT and Windows 7 support

BL2 series panel PCs with resistive touch



Designation	BL2 PPC 1000	BL2 PPC 2000	BL2 PPC 7000
Order No.	2404845	2404846	1016236
Display size (in cm)	30.7 (12.1")/38.1 (15")/43.2 (17")		
Touch technology	Analog resistive (polyester)		
Resolution (W x H in pixels)	1024 x 768 (XGA)/1024 x 768 (XGA)/1280 x 1024 (SXGA)		
Brightness (in cd/m²)	500/300/350		
Backlight MTTF (in h)	50,000		
Reading angle (left / right / top / bottom in °)	Depends on the configuration	Depends on the configuration	Depends on the configuration
CPU	Intel® Celeron® N3350 1.1/2.4 GHz (dual-core)	Intel® Pentium® N4200 1.1/2.5 GHz (quad-core)	Intel® Core™ i5-7442EQ 2.1/2.9 GHz (quad-core)
Cooling	Passive		Convection booster
RAM (configurable)	max. 4 GB DDR3L	max. 8 GB DDR3L	max. 16 GB DDR3L
Data memory (configurable)	M.2 SSD		
Number of slots	1		
USB	2 x USB 2.0, 2 x USB 3.0		
Serial interfaces	1 x COM (RS-232/RS-422/RS-485), 2 x COM (RS-232)		
Video output	2 x DisplayPort		
Graphics processor	Intel® HD Graphics 500	Intel® HD Graphics 505	Intel® HD Graphics 630
PCI/PCIe slots (configurable)	1 x Mini PCIe 802.11 a/b/g/n WLAN		
Dimensions incl. front plate (W x H x D in mm)	365 x 282 x 84/410 x 309 x 86/452 x 356.5 x 86		
Mounting cutout (W x H in mm)	334 x 253/386.6 x 285.6/424 x 329.5		
Weight (in kg)	4.1/5.7/7.1		4.6/6.2/7.6
Current consumption (in A)	1.33/1.45/1.78	1.64/1.75/1.95	2.19/2.25/2.5
Power consumption (in W)	31.9/34.8/42.7	39.4/42/46.8	52.6/54/60

BL2 series panel PCs with PCAP touch



Designation	BL2 PPC 2100	BL2 PPC 3100	BL2 PPC 7100	BL2 PPC 9100
Order No.	1105780	1105781	1105782	1105783
Display size (in cm)	30.7 (15.6")/38.1 (18.5")/43.2 (21.5")			
Touch technology	Projective capacitive (PCAP)			
Resolution (W x H in pixels)	1366 x 768 (WXGA)/1366 x 768 (WXGA)/1920 x 1080 (FHD)			
Brightness (in cd/m²)	300			
Backlight MTTF (in h)	50,000			
Reading angle (left / right / top / bottom in °)	85 / 85 / 80 / 80			
CPU	Intel® Pentium® N4200 1.1 GHz (quad-core)	Intel® Core™ i3-6100U 2.3 GHz (dual-core)	Intel® Core™ i5-6300U 3 GHz (dual-core)	Intel® Core™ i7-6600U 3.4 GHz (dual-core)
Cooling	Passive			
RAM (configurable)	max. 4 GB	max. 8 GB		
Data memory (configurable)	m.2 SATA or 2.5" SATA			
Number of slots	-			
USB	2 x USB 2.0, 2 x USB 3.0			
Serial interfaces	1 x COM (RS-232/RS-422/RS-485), 2 x COM (RS-232)			
Video output	2 x DisplayPort			
Graphics processor	Intel® HD Graphics 505	Intel® HD Graphics 520	Intel® HD Graphics 630	Intel® HD Graphics 520
PCI/PCIe slots (configurable)	1 x Mini PCIe			
Dimensions incl. front plate (W x H x D in mm)	417 x 312 x 82/475 x 305 x 81/562 x 382 x 81			
Mounting cutout (W x H in mm)	401 x 296/475 x 305/547 x 367			
Weight (in kg)	5.4/5.5/8.1		5.5/5.6/8.2	
Current consumption (in A)	1.64/1.75/1.95	2.19/2.25/2.50	2.31/2.36/2.73	2.42/2.51/2.78
Power consumption (in W)	39.4/42.0/46.8	52.6/54.0/60.0	55.44/56.64/60.24	58.08/60.24/66.72

Panel PCs in IP65

Our attractive industrial PCs from the Designline series enable the machine-oriented operation and monitoring of systems outside the control cabinet. Thanks to their narrow design, housing with all-around IP65 protection, and various mounting options, including on a support arm, they provide a particularly flexible operator interface directly on the machine.



Panel PCs with all-around IP65 protection

General technical data

- Display type: TFT
- Colors: 16.2 million
- Ethernet interfaces: 2 x (10/100/1000 Mbps), RJ45, Intel i210-AT
- 1 x audio port
- Operating systems (configurable): Windows® 7 or Windows® 10 IoT Enterprise
- Operating temperature: HDD: 0°C to +45°C
SSD: -20°C to +45°C
- Storage temperature: -40°C to +70°C
- Relative humidity: 5% to 95%, non-condensing
- Housing: aluminum
- Degree of protection: IP65
- Power supply: 24 V DC ±20%
- Mounting type: VESA MIS-D, 100
- Approvals: UL/cUL

Your advantages

- ✓ All-around IP65 protection without an enclosure
- ✓ Low space requirements on the machine with low device depth
- ✓ VESA and support arm mounting possible
- ✓ Light weight allows selection of a lightweight support arm
- ✓ High-performance, fanless system design
- ✓ Individually configurable
- ✓ Service-friendly with easily accessible components

DL series panel PCs



Designation	DL PPC15M 2000	DL PPC15M 7000	DL PPC18.5M 7000	DL PPC21.5M 7000
Order No.	1107937	2400017	2400015	2400016
Display size (in cm)	38.1 (15")		47 (18.5")	54.6 (21.5")
Touch technology	Projective capacitive (PCAP)			
Resolution (W x H in pixels)	1024 x 768 (XGA)		1366 x 768 (WXGA)	1920 x 1080 (FHD)
Brightness (in cd/m ²)	400			
Backlight MTTF (in h)	50,000			
Reading angle (left / right / top / bottom in °)	80 / 80 / 80 / 80			
CPU	Intel® Celeron™ 2980U 1.6 GHz	Intel® Core™ i7-4650U 3.3 GHz		
Cooling	Passive			
RAM (configurable)	max. 12 GB DDR3			
Data memory (configurable)	HDD or SSD			
Number of slots	1			
USB	4 x USB 2.0, 1 x USB 3.0			
Serial interfaces	1 x COM (RS-232/RS-422/RS-485)			
Graphics processor	Intel® HD Graphics 5000			
Dimensions incl. front plate (W x H x D in mm)	375 x 315 x 60	469 x 315 x 60		534 x 355 x 60
Weight (in kg)	4.4	5.7	7.6	
Max. current consumption (in A)	2.41	2.6	2.7	
Connected load (in W)	32.1	36.7	37.4	

Industrial touch monitors

Phoenix Contact offers multi-touch monitors in a modern industrial design for industrial operating concepts where the processing unit and display unit are physically separated. The robust devices can be used directly on the machine. Thanks to their numerous interfaces, they provide the best possible connection to your industrial PC.



Touch monitors

General technical data

- Display type: TFT
- Colors: 16.7 million
- Operating temperature: -10°C to +60°C
- Storage temperature: -20°C to +75°C
- Relative humidity: 10% to 90%, non-condensing
- Housing: sheet steel, painted
- Degree of protection: IP65 (front), IP20 (back)
- Power supply: 24 V DC ±20%
- Mounting type: front installation / VESA MIS-D, 100
- Approvals: UL/cUL

Your advantages

- ✓ Multi-touch screens with 10-point technology
- ✓ Integrated configuration buttons on the back
- ✓ Numerous graphic inputs

Industrial monitors with PCAP touch



Designation	BL FPM 15.6	BL FPM 18.5	BL FPM 21.5
Order No.	2402980	2402981	2400515
Display size (in cm)	39.6 (15.6")	46.9 (18.5")	54.6 (21.5")
Touch technology	Projective capacitive (PCAP)		
Resolution (W x H in pixels)	1366 x 768 (WXGA)		1920 x 1080 (Full HD)
Brightness (in cd/m ²)	300		
Backlight MTTF (in h)	50,000		
Reading angle (left / right / top / bottom in °)	85 / 85 / 80 / 80		
USB	1 x USB 2.0		
With front USB	-		
Video input	1 x DisplayPort, 1 x VGA, 1 x DVI-D		
Front plate dimensions (W x H x D in mm)	417 x 312 x 6	491 x 321 x 10	562 x 382 x 9
Mounting cutout (W x H in mm)	401 x 296	475 x 305	547 x 367
Installation depth (in mm)	46	41	42
Weight (in kg)	5.48	6.24	7.87
Max. current consumption (in A)	0.59	0.74	0.9
Connected load (in W)	14.6	17.76	21.6

Remote monitoring

Using the processing unit and operator interface at the same location is not always ideal, and there are instances where more than one operator interface may be required. With our remote software, you can implement cost-effective multi-access operation that is optimally tailored to the requirements of your system. With the KVM extender, we offer the appropriate hardware solution for transmitting data over larger distances.



ESC Maschineninfo 1 MPL ... 2 P

Arbeitsplatz/Maschine	BM008066
Bezeichnung	
Gruppe	MG540202
Teiligkeit	1
Sollzyklus [Sek/Takt]	12.50
Istzyklus [Sek/Takt]	11.80
Arbeitsgang	0030023241510010
Artikel	1510010
Artikelbez.	1510010-BOF
Bem. 1	00000001
Bem. 2	
Plandauer [Std:Min]	52:05

F1 AG anmelden F3 AG unterbrechen
F2 F4 Ausschussmeldung

PHOENIX CONTACT

KVM extender

Transmit keyboard, video, and mouse signals over distances up to 90 m from the IPC.

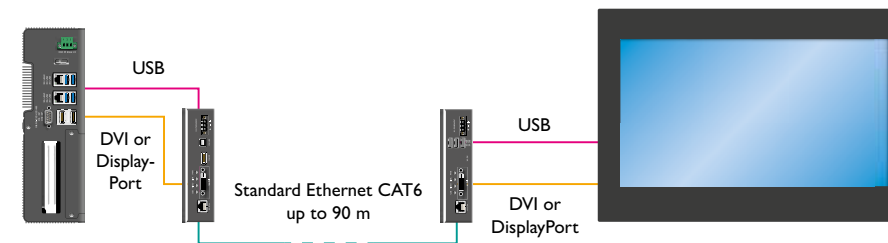


Hardware and software solution

KVM extender

The VL KVM EXTENDER enables data transmission between an industrial PC and an operator panel over a distance of up to 90 m. With just one standard Ethernet cable, video, audio, and USB signals are transmitted between an operator panel and a control cabinet PC without losses. The system is platform-independent and is based on a pure hardware solution.

- Maximum resolution: 1920 x 1080 pixels at 60 Hz (Full HD)
- External dimensions: 150 x 80 x 43 mm
- Wall, bookshelf, or DIN rail mounting
- Interfaces: 1x DVI-D, 1x DP++
- 24 V DC ±20%



Your advantages

- ✓ Flexible remote operating solutions up to 90 m
- ✓ Cost-effective with the elimination of cable and mounting costs
- ✓ Increased system availability with the use of purely passive displays
- ✓ Industry-capable with the extended temperature range from -20°C to +50°C

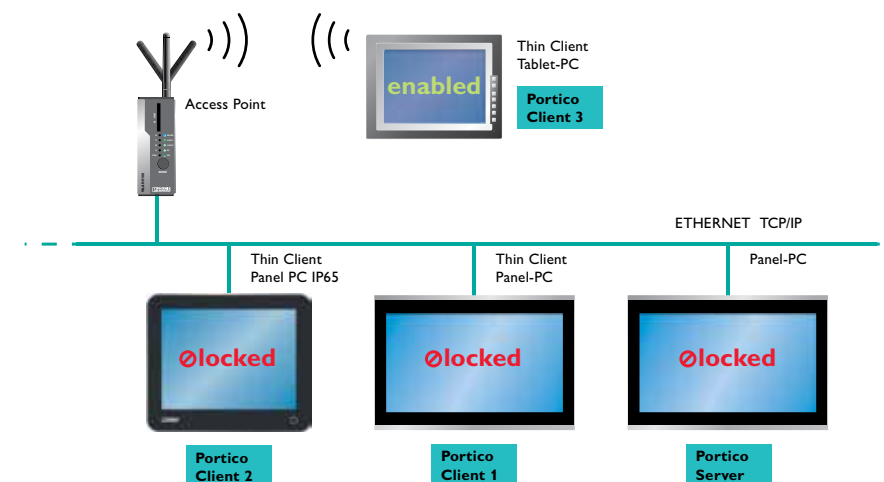
Portico remote software

With the Portico software, you can install up to 16 thin clients exactly where you need them. The simultaneous display of IPC screen information at several operating stations without a server operating system enables simultaneous access to one machine from different locations. The integrated

configuration tool enables the convenient management of access rights, protecting your system against unauthorized access.

Portico

Remote Network Portal



Your advantages

- ✓ Individual operation and monitoring concepts with up to 16 clients
- ✓ Inexpensive due to the use of thin clients
- ✓ Fast screen and input response with communication via TCP/IP network protocol
- ✓ Low memory usage by server and client

HMI and industrial PCs for harsh ambient conditions

HMI and industrial PCs are also used in places where they are exposed to extreme environmental influences and stress. The robust outdoor devices from Phoenix Contact are specifically designed to meet these requirements. In addition to extended temperature ranges, sunlight readable displays, and dustproof and waterproof housings, our devices also have all the necessary certifications.



Robust touch panels for Visu+ applications

General technical data

- Display type: TFT
- CPU: ARM® Cortex®-A8, 1000 MHz
- Memory: 512 MB LPDDR SDRAM, 1 MB SRAM, 1 GB NAND Flash
- Interfaces: 1 x Ethernet (10/100 Mbps), 2 x USB Host 2.0, 1 x SD
- Serial interfaces (optional): 1 x COM (RS-232), 1 x COM (RS-422/RS-485) (electrically isolated)
- Fieldbus interfaces (optional): 2 x CAN (electrically isolated)
- Operating system: MS Windows® Embedded Compact 7
- Operating temperature: -30°C (-20°C) to +70°C
- Storage temperature: -30°C (-20°C) to +80°C
- Relative humidity: 5% to 95% (front) / 20% to 85% (back), non-condensing
- Housing: aluminum/sheet steel, zinc-plated
- Degree of protection: IP67 (front), IP20 (back)
- Installation type: portrait/landscape
- Mounting type: front installation
- Power supply: 24 V DC ±20%
- Approvals: UL/cUL, Class 1 Div 2, NEMA 4X

Your advantages

- ✓ Display can be read in direct sunlight
- ✓ Resistant to UV and IR radiation
- ✓ Extended temperature range
- ✓ Weatherproof and resistant to environmental influences such as salt spray, termites, and chemicals
- ✓ Can be operated when wearing work gloves

Robust HMIs with GFG touch (IP67)



Designation	TP 3043W/WT	TP 3057V/WT	TP 3070W/WT	TP 3121S/WT	TP 3120W/WT	TP 3150S/WT
Order No.	2404286	2403464	2403465	2403466	1029308	1029281
Display size (in cm)	10.92 (4.3")	14.48 (5.7")	17.78 (7")	30.73 (12.1")		38.1 (15")
Touch technology	Analog resistive (GFG), anti-reflective coating					
Colors	262,144		16.77 million	262,144	65,536	
Resolution (W x H in pixels)	480 x 272 (WQVGA)	640 x 480 (VGA)	800 x 480 (WVGA)	800 x 600 (SVGA)	1280 x 800 (WXGA)	1024 x 768 (XGA)
Brightness (in cd/m²)	385	400		360	320	480
Backlight MTTF (in h)	40,000			50,000		
Reading angle (left / right / top / bottom in °)	75 / 75 / 63 / 75	65 / 65 / 55 / 52	70 / 70 / 60 / 60	80 / 80 / 65 / 75	88 / 88 / 88 / 88	80 / 80 / 65 / 80
Front plate dimensions (W x H x D in mm)	171 x 131 x 5	195 x 153 x 5	234 x 174 x 5	359 x 280 x 5	344 x 248 x 5	416 x 325 x 5
Mounting cutout (W x H in mm)	136 x 96	161 x 119	200 x 140	323 x 244	309 x 214	381 x 290
Installation depth (in mm) incl. fieldbus interface	42 68		48.5 75	58 58	59 59	64 64
Weight (in kg)	0.55	0.8	1.1	2.6	2.3	3.6
Current consumption (in A)	0.2	0.3	0.4	0.5	0.7	
Connected load (in W)	4.8	7.2	9.6	12	16.8	

All IP65 versions can be found on our website under web code #2309

Robust panel PCs

General technical data

- Display type: TFT
- Ethernet interfaces: 2 x (10/100/1000 Mbps), RJ45, Intel® i210
- Operating systems (configurable): Windows® 7 or Windows® 10 IoT Enterprise
- Operating temperature: 0°C to +50°C (with Intel® E3845), -20°C to +60°C (with Intel® E3827)
- Storage temperature: -25°C to +70°C
- Relative humidity: front: 5% to 95%, non-condensing, back: 20% to 85%, non-condensing
- Housing: sheet steel/aluminum
- Degree of protection: IP65 (front), IP20 (back)
- Power supply: 24 V DC ±20%
- Mounting type: front installation
- Approvals: UL/cUL, Class 1 Div 2

Your advantages

- ✓ Display can be read in direct sunlight
- ✓ Proven VL2 PPC system design with passive cooling and no moving parts
- ✓ Resistant to UV and IR radiation as well as environmental influences such as salt spray
- ✓ Individually configurable

VL2 series panel PCs with sunlight readable display



Designation	VL2 PPC7 1000		VL2 PPC12 1000	
	Order No.	2403708		2403710
Display size (in cm)	17.8 (7")		30.7 (12.1")	
Touch technology (configurable)	Analog resistive (GFG)	Projective capacitive (PCAP)	Analog resistive (GFG)	Projective capacitive (PCAP)
Resolution (W x H in pixels)	800 x 480 (WXGA)		1280 x 800 (WXGA)	
Brightness (in cd/m²)	350	400	360	320
Backlight MTTF (in h)	40,000		50,000	
Reading angle (left / right / top / bottom in °)	70 / 70 / 65 / 65	70 / 70 / 60 / 60	80 / 80 / 65 / 75	88 / 88 / 88 / 88
CPU	Intel® Atom™ E3827 1.75 GHz (dual-core)			
Cooling	Passive			
RAM	4 GB DDR3			
Data memory	SSD			
Number of slots	1			
USB	2 x USB 2.0, 1 x USB 3.0			
Serial interfaces	1 x COM (RS-232/RS-422/RS-485) Optional: 1 x COM (RS-232) + 1 x COM (RS-485) / 2 x CAN + 1 x COM (RS-232) + 1 x COM (RS-485)			
Video output	1 x DisplayPort			
Graphics processor	Intel® HD Graphics			
Dimensions incl. front plate (W x H x D in mm) incl. optional interfaces	215 x 158 x 87 D: 110	208 x 148.5 x 88 D: 111	336 x 234 x 87 D: 110	336 x 234 x 88 D: 111
Mounting cutout (W x H in mm)	195 x 139	198 x 138	322 x 217	326 x 224
Weight (in kg)	2.3		3.3	
Max. current consumption (in A)	1.1		1.4	
Connected load (in W)	26.4		33.6	

Robust panel PCs

General technical data

- Display type: TFT
- Interfaces: 2 x (10/100/1000 Mbps), RJ45, 1 x COM (RS-232), 3 x USB 3.0, 1 x USB 3.0 on the front with cover, optional: 1 x COM (RS-232)
- Operating systems (configurable): Windows® 10 IoT Enterprise
- Optional: LTE/GPS module
- Optional: Wi-Fi 802.11 a/b/g/n/ac + Bluetooth
- Optional: RFID
- Battery connection for UPS
- Operating temperature: -30°C to 60°C
- Relative humidity: 5% to 95%, non-condensing
- Degree of protection: IP66
- Impact strength: IK08 (EN 62262)
- Supply voltage: 9 to 60 V DC
- Mounting type: VESA in back cover, optional additional holders
- Approvals: UL/cUL in preparation

Your advantages

- ✓ Display can be read in direct sunlight
- ✓ Can be operated when wearing work gloves (also with PCAP)
- ✓ Convenient operation using four freely assignable front buttons
- ✓ Screwless design for easy cleaning

Sunlight readable panel PCs for use on forklift trucks and vehicles



Designation	VMT 9000			
	Order No.	1084510 (configurable)		
Touch technology (configurable)	Analog resistive (polyester) / projective capacitive (PCAP)		Projective capacitive (PCAP)	Analog resistive (polyester) / projective capacitive (PCAP)
Display size (in cm)	26.4 (10.4")	30.7 (12.1")		38.1 (15")
Resolution (W x H in pixels)	1024 x 768 (XGA)		1280 x 800 (WXGA)	1024 x 768 (XGA)
Brightness (in cd/m²)	500	600	400	300
Backlight MTTF (in h)	50,000			
Reading angle (left / right / top / bottom in °)	88 / 88 / 88 / 88	70 / 70 / 80 / 80	88 / 88 / 88 / 88	
CPU	Intel® Atom™ x7-E3950 2 GHz			
RAM (configurable)	max. 8 GB LPDDR4			
Data memory (configurable)	64 GB eMMC, optional: 128 GB M.2 SSD			
Cooling	Passive			
Dimensions (W x H x D in mm)	277 x 249 x 50	312 x 277 x 50	331 x 256 x 50	380 x 326 x 50
Weight (in kg)	3.2	3.65	3.7	4.7
Max. current consumption (in A)	Depends on the configuration			
Connected load (in W)	Depends on the configuration			

Industrial PCs for Ex areas

Wherever there's steam and hissing, where liquids, gases, or powders are mixed, analyzed, or crushed, there is a need for operating and monitoring devices designed for these potentially explosive areas. Phoenix Contact has expanded its VL2 product family with new IECEx and ATEX Zone 2/22-approved panel and box PCs. These new Ex products are available in various performance levels and display sizes and meet all the requirements for devices used in potentially explosive environments.

Worldwide use

These approvals enable our devices to be used in all potentially explosive environments around the globe:

- UL C1D2 for use in North America
- ATEX for use throughout Europe
- IECEx for applications in potentially explosive environments around the globe



Industrial PCs for Ex areas

General technical data

- Ethernet interfaces: 2 x (10/100/1000 Mbps), RJ45, Intel® i210
- Operating systems (configurable): Windows® 7 or Windows® 10 IoT Enterprise
- Housing: sheet steel/aluminum
- Degree of protection: IP30
- Power supply: 24 V DC ±20%
- Mounting type: wall or bookshelf mounting
- Approvals: UL/cUL, Class 1 Div 2, IECEx, ATEX Zone 2

Your advantages

- ✓ Passive cooling and no moving parts
- ✓ Approvals for use in Ex areas of Zone 2/22 without additional measures
- ✓ Unchanged display dimensions and formats ensure easy integration into existing applications

VL2 series box PCs for Ex areas



Designation	VL2 BPC 1000 EX	VL2 BPC 2000 EX	VL2 BPC 3000 EX	VL2 BPC 7000 EX	VL2 BPC 9000 EX
Order No.	1054028	1054027	1054025	105424	1054023
CPU	Intel® Atom™ E3845 4 x 1.91 GHz (quad-core)	Intel® Celeron® N2930 1.83 GHz / 2.16 GHz (quad-core)	Intel® Core™ i3-4010U 1.7 GHz (dual-core)	Intel® Core™ i5-4300U 1.9 GHz / 2.9 GHz (dual-core)	Intel® Core™ i7-6822EQ 2.0 GHz / 2.8 GHz (quad-core)
Cooling	Passive				Convection booster
RAM (configurable)	max. 4 GB DDR3L	max. 8 GB DDR3	max. 16 GB DDR3		max. 32GB DDR4
Data memory (configurable)	SD, HDD or SSD	HDD or SSD	HDD or SSD, RAID support 0/1		
Number of slots	1	2			
USB	2 x USB 2.0, 1 x USB 3.0	4 x USB 2.0	2 x USB 2.0, 2 x USB 3.0		
Serial interfaces	1 x COM (RS-232/RS-422/RS-485) Optional: 1 x COM (RS-232) + 1 x COM (RS-485), 2 x CAN	1 x COM (RS-232/RS-422/RS-485) Optional: 2 x COM (RS-232) + 1 x COM (RS-232/RS-422/RS-485)			
Video output	1 x DisplayPort	2 x DisplayPort			
Graphics processor	Intel® HD Graphics		Intel® HD Graphics 4400		Intel® HD Graphics 530
PCI/PCIe slots (configurable)	–	1 x PCI or 1 x PCIe			
Dimensions (W x H x D in mm)	271 x 211 x 65		264 x 215 x 95		
Weight (in kg)	2.4	4.2	4.8		
Max. current consumption (in A)	1	1.4	1.7	1.8	1.6
Connected load (in W)	24	37.4	41.3	42.7	38.9
Operating temperature	HDD: 0°C to +45°C SSD: 0°C to +50°C	HDD: 0°C to +45°C SSD: -20°C to +50°C		HDD: 0°C to +45°C SSD: -10°C to +50°C	HDD: 0°C to +45°C SSD: -20°C to +50°C
Storage temperature	-25°C to +70°C				
Relative humidity	20% to 85%, non-condensing		5% to 95%, non-condensing		

Industrial PCs for Ex areas

General technical data

- Display type: TFT
- Colors: 16.7 million
- Ethernet interfaces: 2 x (10/100/1000 Mbps), RJ45, Intel® i210
- Operating systems (configurable): Windows® 7 or Windows® 10 IoT Enterprise
- Housing: sheet steel/aluminum
- Degree of protection: IP65 (front), IP30 (back)
- Power supply: 24 V DC ±20%
- Maximum current consumption (in A): depends on the configuration
- Connected load (in W): depends on the configuration
- Mounting type: front installation
- Approvals: UL/cUL, Class 1 Div 2, NEMA 4, IECEx, ATEX Zone 2/22

Your advantages

- ✓ Passive cooling and no moving parts
- ✓ Approvals for use in Ex areas of Zone 2/22 without additional measures
- ✓ Unchanged display dimensions and formats ensure easy integration into existing applications

VL2 series panel PCs for Ex areas



Designation	VL2 PPC 1000 EX	VL2 PPC 2000 EX	VL2 PPC 3000 EX	VL2 PPC 7000 EX	VL2 PPC 9000 EX
Order No.	1050366	1050367	1050368	1050365	1050364
Display size (in cm)	39.6 (15.6")/47 (18.5")/54.6 (21.5")				
Touch technology	Projective capacitive (PCAP)				
Resolution (W x H in pixels)	1366 x 768 (HD)/1366 x 768 (HD)/1920 x 1080 (Full HD)				
Brightness (in cd/m²)	400/300/300				
Reading angle (left / right / top / bottom in °)	89 / 89 / 89 / 89				
CPU	Intel® Atom™ E3845 4 x 1.91 GHz (quad-core)	Intel® Celeron® N2930 1.83 GHz / 2.16 GHz (quad-core)	Intel® Core™ i3-4010U 1.7 GHz (dual-core)	Intel® Core™ i5-4300U 1.9 GHz / 2.9 GHz (dual-core)	Intel® Core™ i7-6822EQ 2.0 GHz / 2.8 GHz (quad-core)
Cooling	Passive				Convection booster
RAM (configurable)	max. 4 GB DDR3L	max. 8 GB DDR3	max. 16 GB DDR3		max. 32GB DDR4
Data memory (configurable)	HDD or SSD		HDD or SSD, RAID support 0/1		
Number of slots	1	2			
USB	2 x USB 2.0, 1 x USB 3.0	4 x USB 2.0	2 x USB 2.0, 2 x USB 3.0		
Serial interfaces	See left page				
Video output	1 x DisplayPort	2 x DisplayPort			
Graphics processor	Intel® HD Graphics		Intel® HD Graphics 4400		Intel® HD Graphics 530
PCI/PCIe slots (configurable)	–	1 x PCI or 1 x PCIe			
Dimensions incl. front plate (W x H x D in mm)	408 x 275 x 100/ 465 x 313 x 102/ 532 x 354 x 99	408 x 275 x 121/465 x 313 x 123/532 x 354 x 119			
Mounting cutout (W x H in mm)	394 x 263/455 x 303/522 x 344				
Weight (in kg)	8.6/10.4/12.7				
Operating temperature	HDD: 0°C to +45°C SSD: 0°C to +50°C	HDD: 0°C to +45°C SSD: -20°C to +60°C		HDD: 0°C to +45°C SSD: -10°C to +60°C	HDD: 0°C to +45°C SSD: -20°C to +60°C
Relative humidity	20% to 85%, non-condensing		5% to 95%, non-condensing		

