

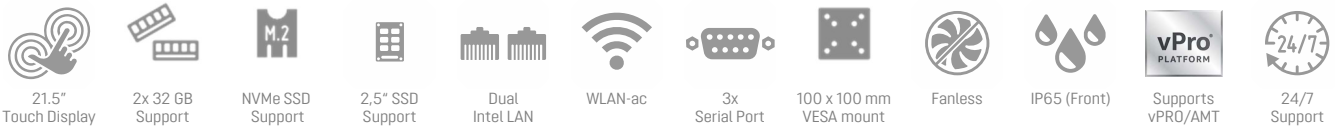
## Panel PC P21WL01-i5 Intel Core-i5 ULV

### INDUSTRY-GRADE PANEL PC WITH 21.5" DISPLAY

The high-value P21WL01 series of Panel PCs comes with a rugged Aluminium chassis with a IP65 compliant front panel and is powered by an Intel ULV processor. The display is Full-HD and sports a projected capacitive 10-point multi-touch function. With its passive cooling the system is virtually noiseless, maintenance-free and approved for 24/7 nonstop operation. The Panel PC is available with different Intel Core processors and additional features on request. This makes it the perfect choice for rugged and public applications such as healthcare, hospitality sector, digital signage, POI, POS, Kiosk and industry.



Images for illustration only.



#### ROBUST CHASSIS

- Robust Aluminium chassis (3 mm thickness) with magnetic cover for the I/O connectors
- IP65 front panel protection
- Dimensions (WHD): 543 x 334 x 49.9 mm
- Net weight: 7.6 kg
- Fanless cooling system
- Operating temperature: 0 ~ 40 °C
- Humidity: 20 ~ 80% RH non-condensing
- Mounting holes for 100 x 100 mm VESA mount (VESA mount and stand are not included)

#### TOUCH PANEL AND GRAPHICS

- High quality 21.5" / 54.6cm display with 1920x1080 pixels
- Brightness: 300 cd/m<sup>2</sup>, Contrast ratio 3000:1, Viewing angle: 89° (all directions)
- Capacitive touch panel with 10-point multi-touch
- Integrated Intel UHD graphics, 4K support (features depending on processor)
- Support two additional displays with HDMI and DVI-I ports

#### OPERATING SYSTEM

- An operating system is not included.
- Supports Windows 10, Windows 11 and Linux (64-bit)

#### PROCESSOR/GRAPHICS

- Intel Core i5-8365UE, 4 Cores, 8 Threads, 1.6-4.1 GHz, 6 MB Cache
- Supports Intel vPRO and ATM technology
- "Whiskey Lake" ULV Prozessor, 15 W TDP
- Integrated Intel UHD 620 graphics

#### MEMORY SUPPORT

- 2x 260-pin SO-DIMM slot
- Supports Dual Channel, up to 2x 32 GB DDR4-2400

#### STORAGE

- M.2-2280/2260 M slot supports one SSD card (supports PCIe X4 NVMe and SATA interface)
- Swappable drive tray for 2.5"/7mm SATA SSD storage drive

#### BACK PANEL CONNECTORS

- HDMI 1.4b
- DVI-I
- 4x USB 3.2 Gen 1
- Dual Gigabit LAN (Intel i219LM/i211)
- 3x COM Ports (1x RS232 and 2x RS232/422/485)
- Mic-in and Line-out (Realtek ALC662/ALC888S)
- DC-input 19V
- Power Button and Easy Rock Switch

#### OTHER FEATURES

- WLAN 802.11ac and BT 4.2 with two internal antennas
- Hardware TPM v2.0 Infineon SLB9670VQ2 onboard
- AMI BIOS, 32 MB SPI ROM supports Intel vPro and ATM features
- Embedded I/O controller: ITE IT8528E/FX, Full-HD Webcam

#### POWER SUPPLY

- External 90W/19V power adapter
- AC input 100~240V 50~60 Hz, 3-pin connector
- DC input: 19V (optional 9~36V on request)

#### Models available from stock in EU:

Product	Type	Processor	Intel vPRO/ATM	UPC Code
P21WL01-i3	Barebone	Intel Core i3-8145UE	-	887993003887
<b>P21WL01-i5</b>	Barebone	Intel Core i5-8365UE	Supported	887993003894
P21WL01-i7	Barebone	Intel Core i7-8665UE	Supported	887993005621



## Front and Back Panel

Front panel



- 1. 21.5" Touch Panel
- 2. Full-HD Webcam

Rear View



- 3. Screw threads for VESA mount (100x100 mm)
- 4. Swappable 2.5" drive tray for SSD (7 mm)
- 5. Perforation for optional Potential Equalization Pin (POAG) according to DIN 42801
- 6. DVI-I graphics port
- 7. 2x RS232/422/485 Serial COM Port
- 8. Audio Line Out (Headphones output)
- 9. Microphone input
- 10. Gigabit LAN port (Intel i211)
- 11. Gigabit LAN port (Intel i219LM)
- 12. 4x USB 3.2 Gen 1 Type A port
- 13. HDMI 1.4b graphics port
- 14. RS232 Serial COM Port
- 15. DC-in connector for power adapter
- 16. Power button
- 17. Easy Rock Switch

Back Panel



## SPECIAL FEATURES



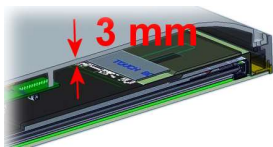
### Reliable nonstop operation

The Shuttle Panel PC P21WL01-i5 is officially approved for 24/7 permanent operation at an ambient temperature of up to 40 °C. Thanks to its low power consumption and completely passive cooling, this PC runs highly reliably and is virtually noiseless.



### 21.5" Full-HD Touch Screen

This Panel PC has a high-grade 21.5" (54.6 cm) Full-HD display with high brightness (300 cd/qm) and low viewing angle dependence ( $\pm 89^\circ$ ). The capacitive multitouch screen can also be operated with gloves and allows precise input with two or more fingers at the same time.



### Robust Aluminium Chassis

Rear chassis and middle frame are completely made of high-grade Aluminium of 3 mm thickness.



### Protection Class IP65

The front panel is dust-protected and protected from splashing of water according to IP protection class 65. Consequently, this All-in-One PC can be used for those indoor applications, where the touchscreen may be exposed to humidity and splashing of water. This is particularly welcome in restaurants, laboratories, production or other places.



### VESA Mounting

The Shuttle Panel PC P21WL01-i5 has four threaded holes for mounting a 100 x 100 mm VESA mount, which is not included. For example, a suitable stand, VESA arm or wall mount can be used to mount the Panel PC. Note: VESA mount and stand are not included in the scope of delivery.



### Optimized cable management

The connections on the back panel are facing down and hidden by a cover. The cover snaps in magnetically and is also fixed with screws.



Through a small opening the cables are led away from the PC in an orderly fashion. This leads to an effective cable management making for a clean, tidy appearance.



### Hidden Power Button

Since the power button is not accessible when the cover is on, there is also a Rock Switch hidden on the back. You can also enable the "Restore on AC Power Loss" option in the BIOS so that it always starts immediately once voltage is applied.



### External 2.5" Bay

A 2.5" drive bay for an SSD drive is accessible from the outside for easy swapping of storage for installation and upgrade convenience. Additionally, an SSD card in M.2-2280/2260 format can be installed inside.



### Triple Display Support

In addition to the built-in display two more independent Full-HD displays can be connected via HDMI 1.4b and DVI-I. The DVI-I port also provides the output signal for analog VGA displays.



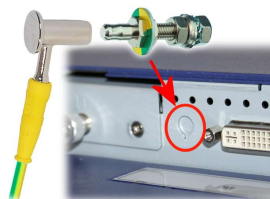
### Triple COM Port

The numerous connections include three serial COM ports with D-Sub connectors, two of which also support the RS422/485 standard.



### Dual Intel Gigabit Netzwerk

The Shuttle Panel PC P21WL01-i5 supports Dual Gigabit LAN with Intel network adapters, which are known for their excellent performance and driver compatibility and therefore are the preferred choice in professional environments.



### Potential equalization (opt.)

A 6.5 mm perforation allows the installation of an optional potential equalization pin (POAG) according to DIN 42801 in order to connect the Panel PC with a suitable potential equalization terminal, that can be required in medical environments, for example.



### Modification on request

Upon request on a project-related basis, the Shuttle Panel PC P21WL01-i5 can be ordered with external WLAN antennas or other connections (e.g. DisplayPort, additional USB ports or a second HDMI port).

## SHUTTLE Panel PC P21WL01-i5 – SPECIFICATIONS

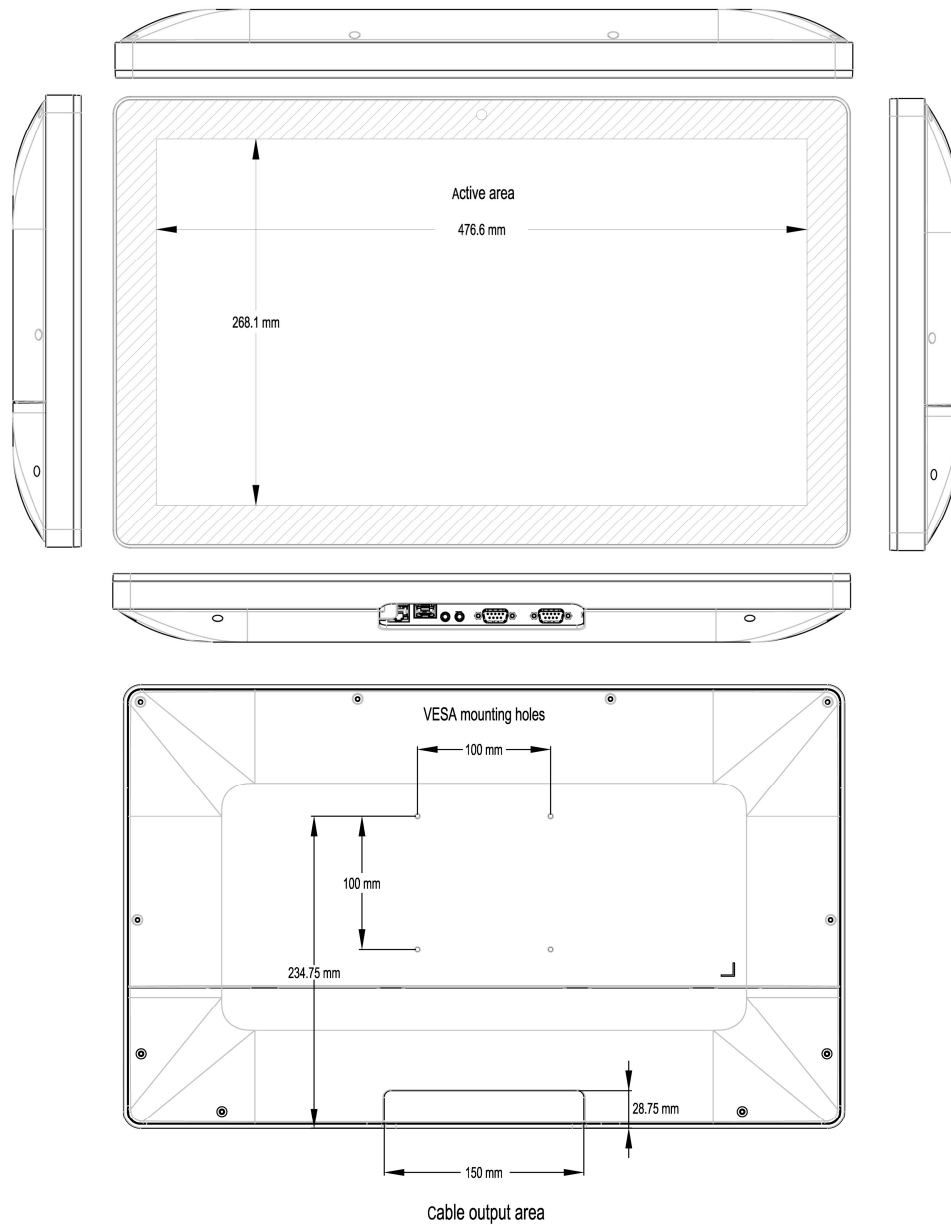
<b>FANLESS AND SILENT</b>	<p>Passive heatpipe cooling, absolutely no fan noise</p> <p>Perfect for noise-sensitive environments</p> <p>Fanless, dust-free and thus virtually maintenance-free</p>
<b>24/7 NONSTOP OPERATION</b>	<p>This device is approved for 24/7 permanent operation.</p> <p>Requirements:</p> <ul style="list-style-type: none"> <li>- Free circulation of air amongst the PC must be guaranteed.</li> <li>- If a SSD is installed, this must also be approved for permanent operation by its manufacturer.</li> </ul>
<b>IP65 PROTECTED</b>	<p>The front panel is protected from dust and jets of water according to protection class IP65.</p>
<b>CHASSIS</b>	<p>Robust chassis with cover for the I/O connectors</p> <p>Rear/cable cover and middle frame are all made of Aluminium</p> <p>Rear cover chassis thickness: 3.0 mm</p> <p>Colour: dark blue</p> <p>Dimensions: 543 x 334 x 49.9 mm (W x H x D)</p> <p>100x100 mm VESA mountable, 4x M4x6L screws required)</p> <p>VESA mount and stand are not included in the scope of delivery.</p> <p>Net weight: 7.6 kg</p>
<b>OPERATING SYSTEM</b>	<p>This system comes without operating system. It is compatible with:</p> <ul style="list-style-type: none"> <li>- Windows 10 ( 64-bit)</li> <li>- Windows 11 ( 64-bit)</li> <li>- Linux (64-bit)</li> </ul>
<b>TOUCHSCREEN</b>	<p>Touchscreen function supports fingertip input</p> <p>Projected capacitive touch panel with 10-point multi-touch</p> <p>Supports input with gloves (PVC, cotton, cotton/linen)</p> <p>Stylus pen not supported</p>
<b>DISPLAY (54.6 cm / 21.5")</b>	<p>54.6 cm / 21.5" LC display</p> <p>Type: a-Si TFT-LCD, VA mode</p> <p>Ratio: 16:9 wide-screen panel</p> <p>Native resolution: 1920 x 1080 = 2 Megapixel (Full HD / 1080p)</p> <p>Viewing angle (left/right/up/down): 89°</p> <p>Brightness: 300 cd/sqm or nits (typ.)</p> <p>Contrast: 3000:1 (typ.)</p> <p>Viewing Angle: 89°/89°/89°/89° (typ.)</p> <p>Backlight lifetime: 30.000 hours</p>
<b>PROCESSOR</b>	<p>Model: Intel Core i5-8365UE (ULV)</p> <p>System-on-a-chip architecture (SoC) with integrated memory and graphics controller</p> <p>FCBGA1528 package - directly soldered onto the mainboard</p> <p>Code name: Whiskey Lake-U (8th Generation Intel Core)</p> <p>Cores / Threads: 4 / 8</p> <p>Clock rate: 1.6 GHz, Turbo clock rate: 4.1 GHz</p> <p>L3 Smart Cache: 6 MB</p> <p>TDP wattage: 15 W maximum</p>
<b>INTEGRATED GRAPHICS</b>	<p>Intel UHD Graphics 620</p> <p>GPU clock frequency: 300~1050 MHz</p> <p>Execution Units (EUs): 24</p> <p>Supports up to three independent screens:</p> <ol style="list-style-type: none"> <li>1) Built-in Full-HD display (supports 1080p/60)</li> <li>2) HDMI 1.4b Anschluss (supports 1080p/60 and 2160p/30)</li> <li>3) DVI-I Anschluss (supports 1080p/60)</li> </ol> <p>Note: DVI-I also supports analog VGA displays with an optional adapter</p>
<b>UEFI BIOS</b>	<p>Supports resume after power failure</p> <p>Supports Wake on LAN (WOL)</p> <p>Supports Power on by RTC Alarm</p> <p>Supports boot from M.2 SSD cards and USB devices</p> <p>AMI BIOS in 32 MB EEPROM with SPI interface</p> <p>Supports hardware monitoring and Watchdog function</p> <p>Supports Unified Extensible Firmware Interface (UEFI)</p>

INTEL vPRO & AMT	<p>Intel® vPro™ is a brand name for a specific set of management and security technologies. Intel® Active Management Technology (AMT) is a subset of Intel vPro. This technology allows remote management of PCs, even in power-off mode or with non-functional operating systems. You can audit, repair and restore AMT-based platforms in a LAN. These functions can increase the uptime of desktops with lower maintenance costs.</p> <p><b>Note:</b> Intel vPro requires appropriate software.</p> <p>The Intel® MEBX configuration user interface can be accessed after pressing CTRL-P at the beginning of the boot process. Only the Intel i219 LAN port (yellow color) supports the Intel vPro® function.</p>
TPM MODULE	Hardware Trusted Platform Module (Infineon SLB9670VQ2 TPM 2.0)
POWER ADAPTER	<p>External 90 W power adapter (fanless)</p> <p>Input: 100~240 V AC, 50/60 Hz</p> <p>Output: 19 V DC, 4.74 A, max. 90 W</p> <p>DC Connector: 5.5/2.5 mm (outer/inner diameter)</p> <p>AC mains cable: 3 pins, ca. 1.8 m length, with C5/C6 coupler (called "Mickey Mouse" or "Clover-leaf") for the power adapter and CEE-7/7 plug with earth-contact (type E+F) for the power outlet</p>
DC INPUT CONNECTOR	<p>DC Input Connector: 5.5 / 2.5 mm (outer/inner diameter)</p> <p>The DC-input of the computer supports an external power source with 19V ± 5%.</p>
WIDE DC-IN RANGE (OPTIONAL)	<p>The DC input voltage range can optionally be extended to support 9-36 V.</p> <p>For this purpose, an accessory item must be purchased separately.</p>
MEMORY SUPPORT	<p>2x SO-DIMM slot with 260 pins</p> <p>Supports DDR4-2400 (PC4-19200) SDRAM at 1.2 V</p> <p>Supports Dual Channel mode</p> <p>Supports a maximum of 32 GB per DIMM, maximum total size: 64 GB</p> <p>Supports two unbuffered DIMM modules (no ECC or registered)</p>
2.5" BAY SUPPORTS SSDs	<p>Supports one SATA SSD drive in 6.35 cm / 2.5" format and up to 7 mm in height</p> <p>The SATA 3.0 interface supports up to 600 MB/s of data transfer speed (6 Gbit/s)</p> <p>The drive can quickly be installed via the swappable drive tray.</p> <p>No Hot-Swap capability (exchanging during a running operation)</p>
M.2 SLOT FOR SSDs	<p>The M.2 2280 M slot provides the following interfaces:</p> <ul style="list-style-type: none"> <li>- PCI-Express Gen. 3.0 X4</li> <li>- SATA v3.0 (max. 6 Gbps)</li> </ul> <p>It supports M.2 cards with a width of 22 mm and a length of 60 or 80 mm (type 2260, 2280).</p> <p>Supports M.2 SATA SSDs (with B+M key) and M.2 PCIe NVMe SSDs (with M key) with auto detection</p>
WEBCAM	Integrated Full-HD 2.0 Megapixel (1920 x 1080) camera
AUDIO	<p>Audio Realtek® ALC662 or ALC888S High-Definition Audio</p> <p>Two analog audio connectors (3.5 mm) on the back panel:</p> <ol style="list-style-type: none"> <li>1) 2 channel line out (headphones)</li> <li>2) microphone input</li> </ol> <p>Digital multi-channel audio output: via HDMI</p>
DUAL GIGABIT LAN	<p>Dual network with two RJ45 ports</p> <p>Used network chips:</p> <ol style="list-style-type: none"> <li>1) Intel i211 Ethernet Controller with MAC, PHY and PCIe interface</li> <li>2) Intel i219LM PHY connected to the MAC of the processor</li> </ol> <p>Supports 10 / 100 / 1000 MBit/s operation</p> <p>Supports WAKE ON LAN (WOL)</p> <p>Supports network boot by Preboot eXecution Environment (PXE)</p> <p>Supports Teaming mode</p>
WIRELESS NETWORK (WLAN)	<p>Built-in M.2-2230-E WLAN card with two internal antennas (external antennas available on request)</p> <p>WLAN Controller Realtek RTL8821CE</p> <p>Supports WiFi IEEE 802.11b/g/n/ac in the 2.4 / 5 GHz band, 1T1R</p> <p>Supports 20 / 40 / 80 MHz channel bandwidth</p> <p>Security: supports WPA(-PSK), WPA2(-PSK), WEP 64/128 bit, IEEE 802.11x, IEEE 802.11i</p> <p>Supports Bluetooth 4.2 in the 2.4 GHz band</p>

<b>BACK PANEL CONNECTORS</b>	<p>Power Button and Easy Rock Switch  HDMI 1.4b (digital video+audio)  DVI-I (video, analog+digital)  4x USB 3.2 Gen 1 Type A (max. 5 Gbps)  2x Intel Gigabit LAN (RJ45, i211/i219LM)  3x Serial Port DB9/D-sub (1x RS232 and 2x RS232/422/485)  (the RS232/422/485 ports supports 5V auxiliary voltage on the RI pin)  Microphone input (3.5 mm)  Audio Line-out / Headphones (3.5 mm)  DC-input connector for external power adapter (19V / 90W)  Perforation (6.5 mm) for an optional potential equalization pin (POAG) according to DIN 42801</p>
<b>OTHER CONNECTION OPTIONS</b>	<p>The backpanel has three sections, which can be assigned with other connections.  This requires a modification of the metallic back panel shield.  Available ports: HDMI, DisplayPort, DVI-I, VGA, Quad USB 2.0, COM.</p>
<b>ENVIRONMENTAL SPECIFICATIONS</b>	<p>Operating temperature: 0 ~ 40 °C  Storage temperature: -20 ~ 60 °C  Permitted relative humidity: 20 ~ 80 % (non-condensing)</p>
<b>CONFORMITY AND CERTIFICATIONS</b>	<p>EMI: CE, FCC Class A, VCCI, BSMI  Safety: CB, cTUVus, BSMI  RF: EU, US, Taiwan</p> <p>This device is classed as a technical information equipment (ITE) in Class A. Class A is for products used in commercial and industrial areas. The CE-mark approves the conformity by the EU directives:</p> <ol style="list-style-type: none"> <li>(1) 2014/30/EU relating to electromagnetic compatibility (EMC),</li> <li>(2) 2014/35/EU relating to Electrical Equipment designed for use within certain voltage limits (LVD),</li> <li>(3) 2009/125/EC relating to eco design requirements for energy-related products (ErP)</li> <li>(4) 2014/53/EU Radio Equipment Directive (RED)</li> </ol>

## SHUTTLE Panel PC P21WL01-i5 — TECHNICAL DRAWING

Overall dimensions: 543 x 334 x 49.9 mm (WHD)



VESA mount and stand are not included in the scope of delivery.

## MODIFICATION ON REQUEST

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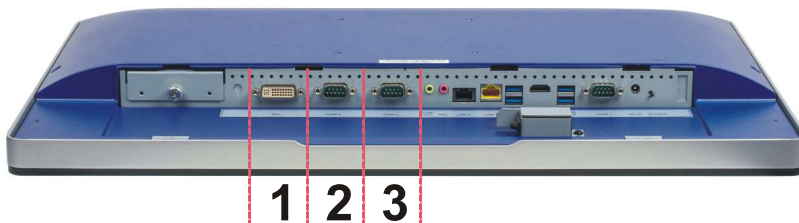









External WLAN antennas upon request

## Other connection options

The backpanel has three sections, which can be assigned with other connections. This requires a modification of the metallic back panel shield.

### I/O Sections



PORT	IMAGE	OCCUPIED SECTIONS	MAXIMUM KITS
HDMI 1.4 HDMI 2.0	 HDMI	1	1
DVI-I	 DVI	1 (Default)	1
DisplayPort 1.2	 DP	1	1
D-Sub/VGA	 VGA	1	2
4x USB 2.0	 USB 2.0    USB 2.0	1	1
Single COM (RS232 only)	 COM	1	1
Dual COM (RS232 / RS422 / RS485)	 COM    COM	2 (Default)	1

Please contact us for further details and options.