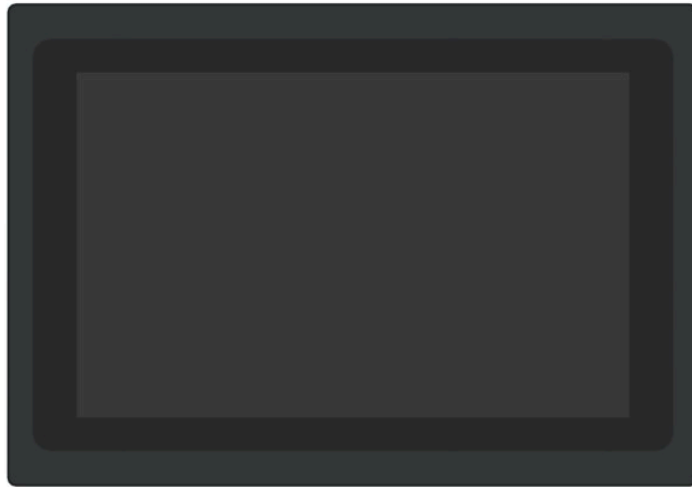


Cleartex

# Panel PC

**Technical specification**

Version: 1.0.0 (May 2023)



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# 1. Safety guidelines

## 1.1 Intended use

National and international standards, regulations and safety measures must always be taken into account.

Panel PC described in this manual is intended for industrial applications: operation, monitoring HMI tasks in automation machine systems.

Product can be used only in original condition. Modifications and extensions are not permitted.

Cleartex excludes liability for damage of any kind resulting from the use of Cleartex products in any intended way.

## 1.2 Protection against electrostatic discharge

Electrical assemblies including can be damaged by electrostatic discharge (ESD) and must be handled accordingly:

- Do not touch connector contacts of interfaces
- Do not touch connector contacts of connected cables
- Do not touch connector contacts during connecting of interfaces
- Always connect all interfaces only in OFF state and zero voltage level

## 1.3 Operation

To minimize the risk of damage, death or injury, the equipment must be always properly grounded using CHASSIS pin on power connector.

The presence of aggressive gasses in the environment can result in malfunctions. In combination with high temperature and relative humidity, aggressive gasses - for example with sulfur, nitrogen and chlorine components - trigger chemical processes that can very quickly impair or damage electronic components. Blackened copper surfaces and cable ends in existing installations are indicators of aggressive gasses.

## 2. Device description

### 2.1 Technical data

PanelPC 10.1	
<b>General</b>	
Cooling	Fanless
Reset button	Yes
Power button	Yes
Operating temperature	-20 to 60°C <sup>1</sup>
Storage temperature	-20 to 80°C <sup>1</sup>
Transport temperature	-20 to 80°C <sup>1</sup>
Materials	Front panel aluminum IP65, backside stainless steel IP20
Weight	1.3 kg
Mounting	VESA (100×100) or into cutout
Power voltage	24 VDC (±10 %)
Power consumption	8 W
Lifetime	45000 h (max. temperature 45 °C)
<b>Dimensions</b>	
Width	271.5 mm
Height	190 mm
Active area width	210 mm
Active area height	135.6 mm
Depth	34.7 mm
Cutout installation depth	26.9 mm
<b>Display</b>	
Type	IPS
Size (diagonal)	10.1"
Resolution	1280×800 px (WXGA)
Brightness	300 cd/m <sup>2</sup>
Colors	16.7 million (RGB, 8 bits per channel)
<b>Controller</b>	
CPU	Rockchip RK3399 (6 core, 2 GHz)
RAM	2 GB
Flash memory	32 GB High speed eMMC
Interfaces	2×USB 2.0, 2×USB 3.0, 1×GigE, micro USB (terminal)
Consumption	15 W

<sup>1</sup> For humidity, see [Temperature and humidity diagram \(page 7\)](#).

## 2.2 Mode of operation

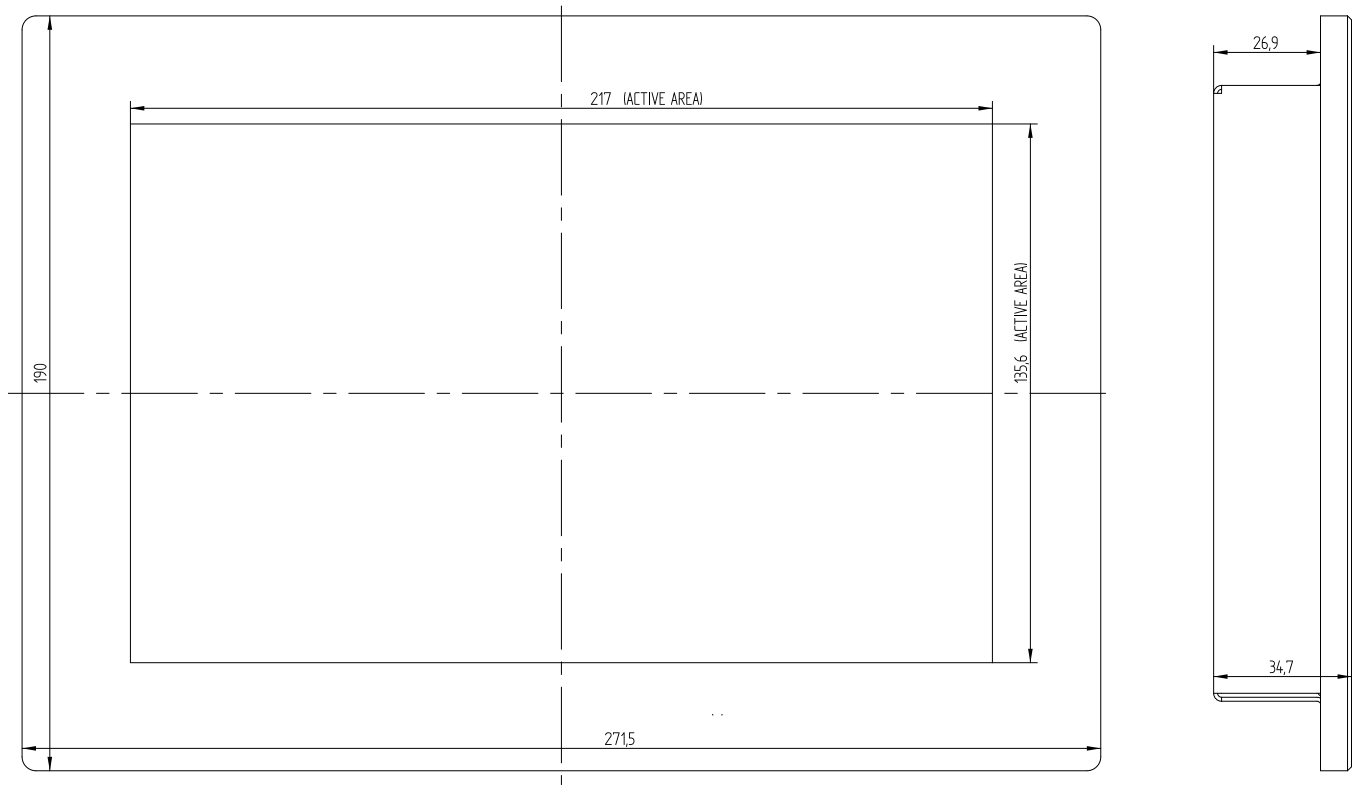
Panel PC can operate in two operating modes:

- VNC client: panel connects to VNC server, render view and transfer events between VNC server and panel
- Web browser: panel opens configured web page in chromium web browser with full javascript support

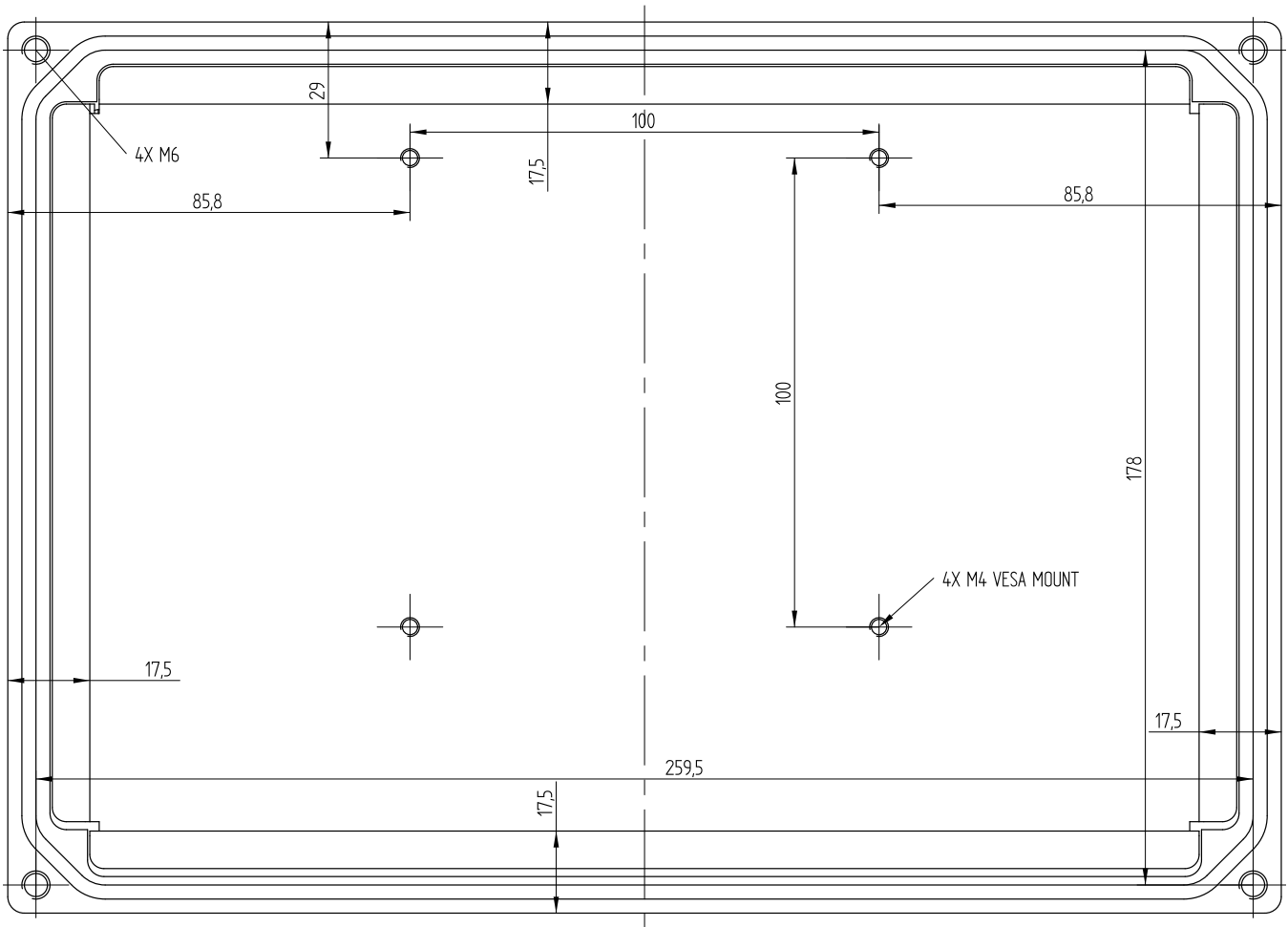
At the same time, panel can also be configured to act as OPC UA server.

More information about panel configuration in [Configuration \(page 10\)](#) chapter.

## 2.3 Drawings

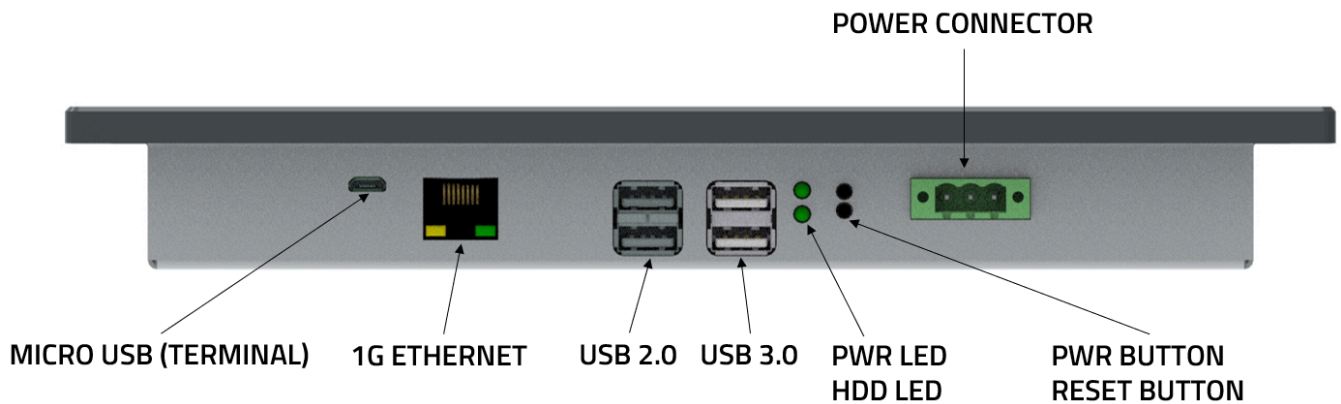


Img. 1: Front and side drawing (interfaces on the bottom)

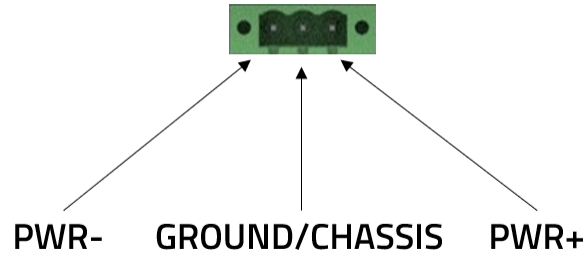


Img. 2: Back side (interfaces on the bottom)

## 2.4 Interfaces



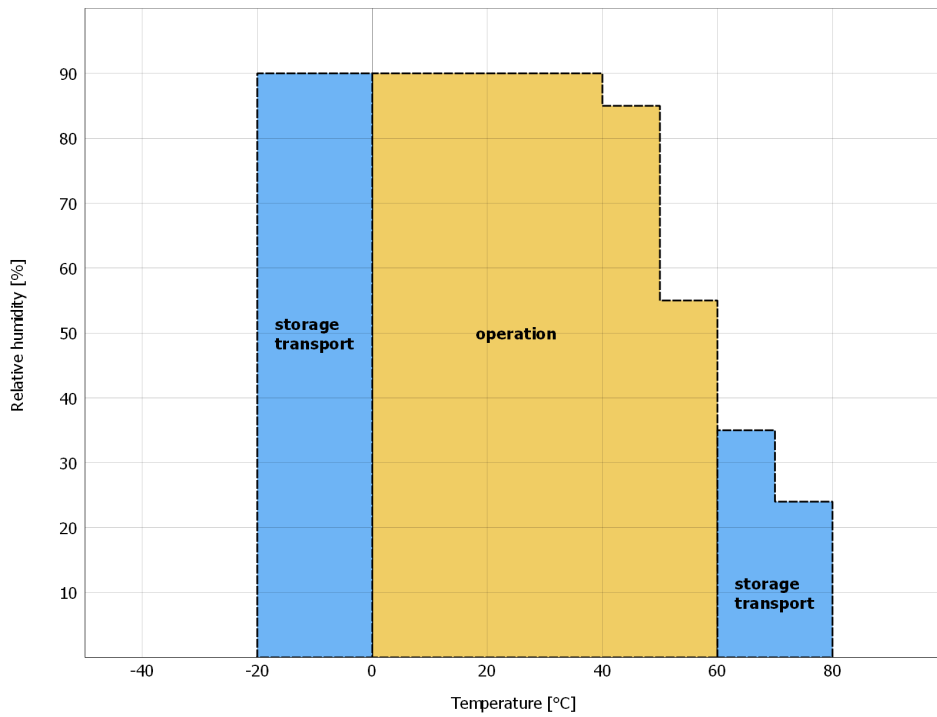
Img. 3: interfaces



Img. 4: PWR connector pinout

PWR mating connector: Phoenix PN# 1777992

## 2.5 Temperature/humidity



Img. 5: Temperature and humidity

Operation temperatures: 0 to 60 °C \*

Storage and transport: -20 to 80 °C

\* Maximum operating temperature can be affected by installation angle. More information in chapter [Installation \(page 9\)](#).

## 2.6 Touch function

Panel must be used only by hand - usage of stylus and other objects is prohibited.

## 2.7 Surface resistance

Front glass is resistant to following chemicals for an exposure time of 24 hours without visible changes:

- Acetone
- Alkaline cleaning solutions
- Ammonia 5%
- Unleaded gasoline
- Beer
- Brake fluid
- Chlorine-alkaline cleaning and disinfecting agents (pH value min. 11) 1.5%
- Hydrogen chloride 6%
- Coca Cola
- Diesel
- Diesel oil
- Dimethylbenzene
- Vinegar
- Ethanol
- Grease
- Ammonia-based glass cleaners
- Sidolin glass cleaner
- Graphite
- Hydraulic fluid (Skydrol)
- Isopropyl
- Coffee
- Ink
- Lysol
- Methyl benzene
- Methyl ethyl ketone
- Naphtha
- Caustic soda 5%
- Nitric acid 70%
- Hydrochloric acid 5%
- Lubricants
- Sulphuric acid 40%
- Suntan oil and UV radiation
- Cooking oil
- Stamping ink
- Tea
- Turpentine
- Turpentine oil replacement (thinner)
- Trichloroethylene



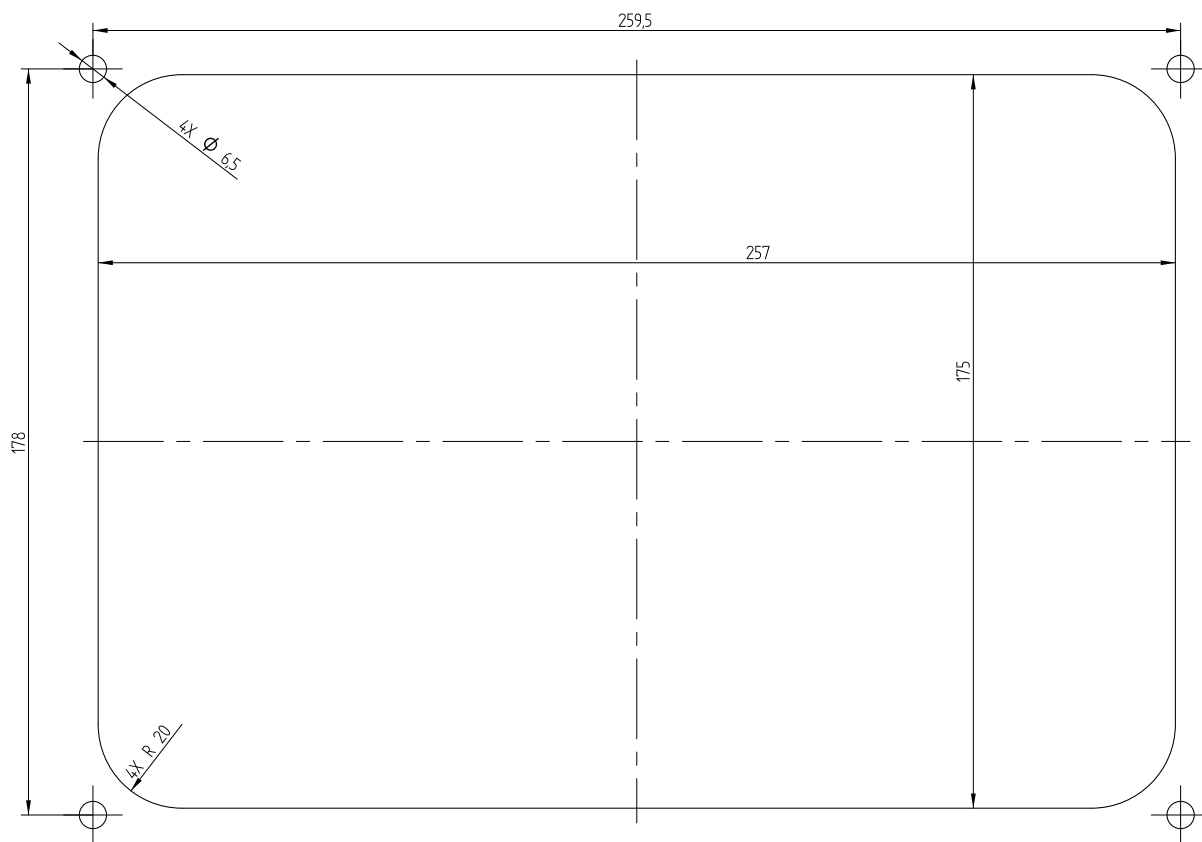
### 3. Installation

Panel PC can be mounted in two ways:

- Using VESA mount (100×100)
- Inside cutout using four mounting holes

In case of cutout installation, following conditions must be met:

- **Maximum deviation from surface evennes:** 0.5 mm
- **Maximum roughness:** 120  $\mu\text{m}$
- **Minimum wall thickness:** 2 mm



*Img. 6: Installation cutout drawing*

Panel is expected to be mounted vertically. Maximum vertical tilt of panel is  $\pm 25^\circ\text{C}$ .

**In case of higher vertical tilt or horizontal mounting, maximum operating temperature is lowered by  $5^\circ\text{C}$ .**

## 4. Configuration

Panel can be configured in multiple ways:

- Settings interface
- Backup on USB flash drive
- OPC UA server - only subset of parameters

### 4.1 Settings interface

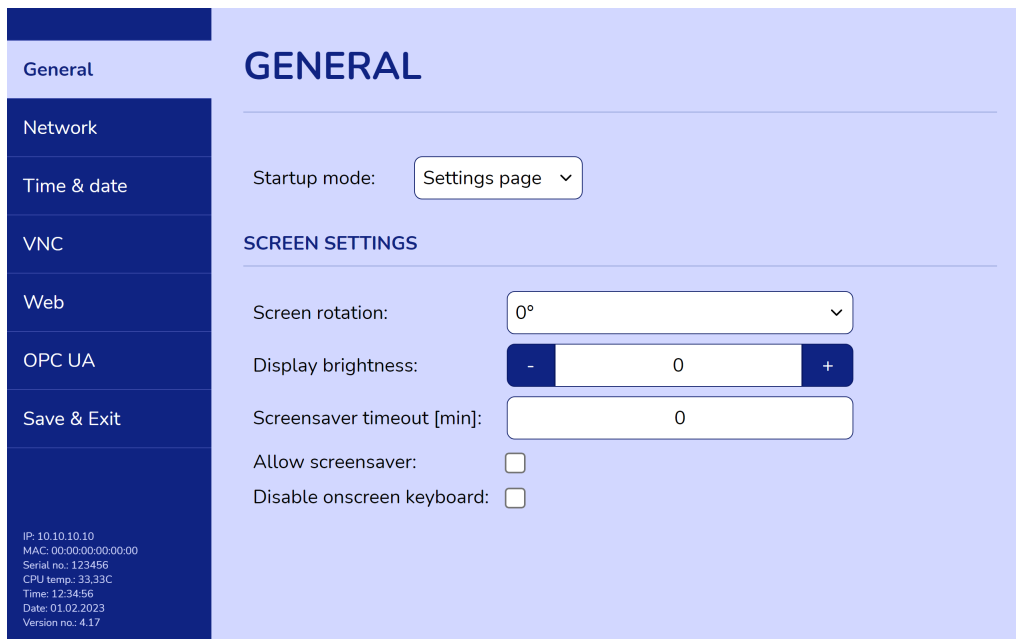
From the factory the panel is configured to open Settings interface. During startup to Web browser or VNC client (when configured), Settings interface can be opened from startup splash screen using double-tap on the screen. Splash screen is displayed for 3 seconds during startup.

On all Setting screens, basic information is displayed in the bottom left corner:

- **IP**: currently set IP address
- **MAC**: panel MAC address
- **Serial NO**: panel factory serial number
- **CPU temp**: current CPU temperature
- **Time**: current time
- **Date**: current date
- **Version no**: panel software version

#### 4.1.1 General screen

General screen contains the most important panel settings.



Img. 7: General screen

- **Startup mode:** runtime mode of panel:
  - Setting page: opens configuration interface
  - Web page: opens configured URL in web browser
  - VNC viewer: connects to VNC server
- **Screen rotation:** screen orientation settings: 0, 90, 180 or 270 degrees.
- **Display brightness:** display brightness in range 0-100
- **Screensaver timeout:** time of inactivity after which screensaver is displayed
- **Allow screensaver:** enable/disable screensaver
- **Disable onscreen keyboard:** enable/disable onscreen keyboard

## 4.1.2 Network screen

Ethernet connection settings.

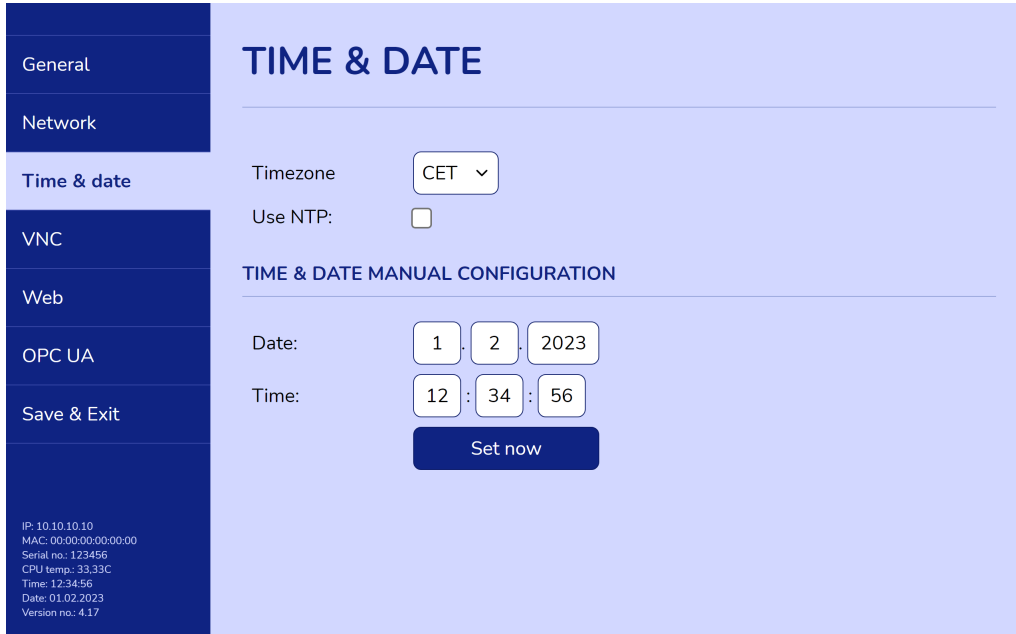
The screenshot shows the 'NETWORK' configuration page. On the left sidebar, 'Network' is selected. The main content area is divided into two sections. The top section, 'General', contains 'Hostname' (ppc) and 'Use DHCP' (unchecked). The bottom section, 'STATIC CONFIGURATION', contains 'IP address' (10.0.1.123), 'Subnet mask' (255.255.254.0), and 'Default gateway' (10.0.0.138). At the bottom left of the sidebar, system status is displayed: IP: 10.10.10.10, MAC: 00:00:00:00:00:00, Serial no.: 123456, CPU temp.: 33.33C, Time: 12:34:56, Date: 01.02.2023, Version no.: 4.17.

*Img. 8: Network settings screen*

- **Hostname:** panel network name
- **Use DHCP:** enable/disable DHCP. If checked, network settings is automatically assigned and static options are hidden. If unchecked, static setting options are displayed: IP address, subnet mask and default gateway.

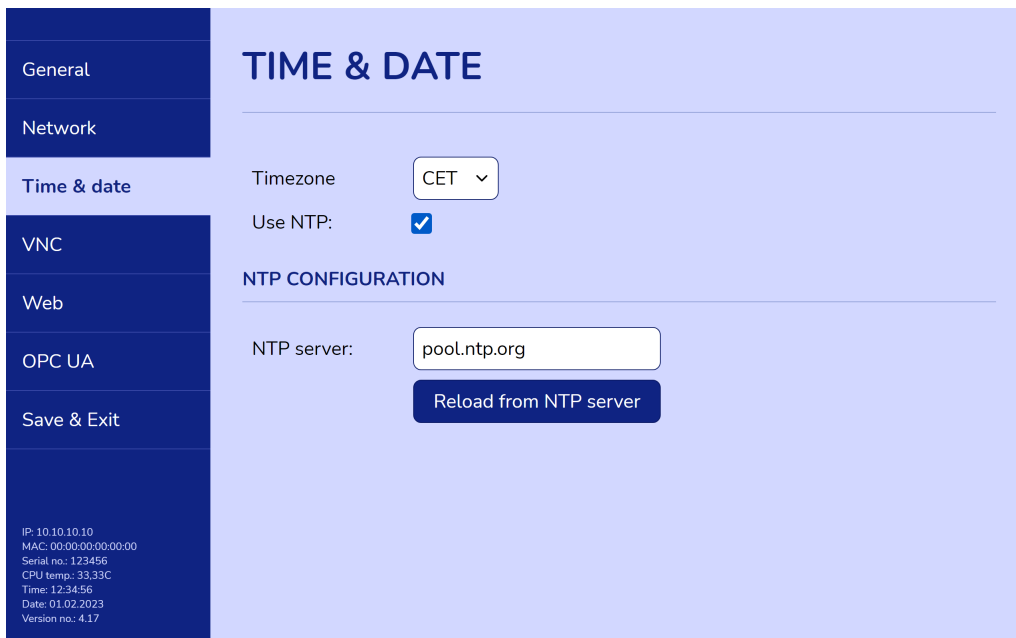
### 4.1.3 Time and date screen

Time and date settings, timezone and NTP server configuration. When Use NTP server option is unchecked, date and time can be configured manually:



Img. 9: Manual date and time settings screen

When Use NTP server is checked, time will be synchronized with configured NTP server during panel startup. Synchronization can be also performed manually using "Reload from NTP server" button.



Img. 10: NTP date and time settings screen

## 4.1.4 VNC screen

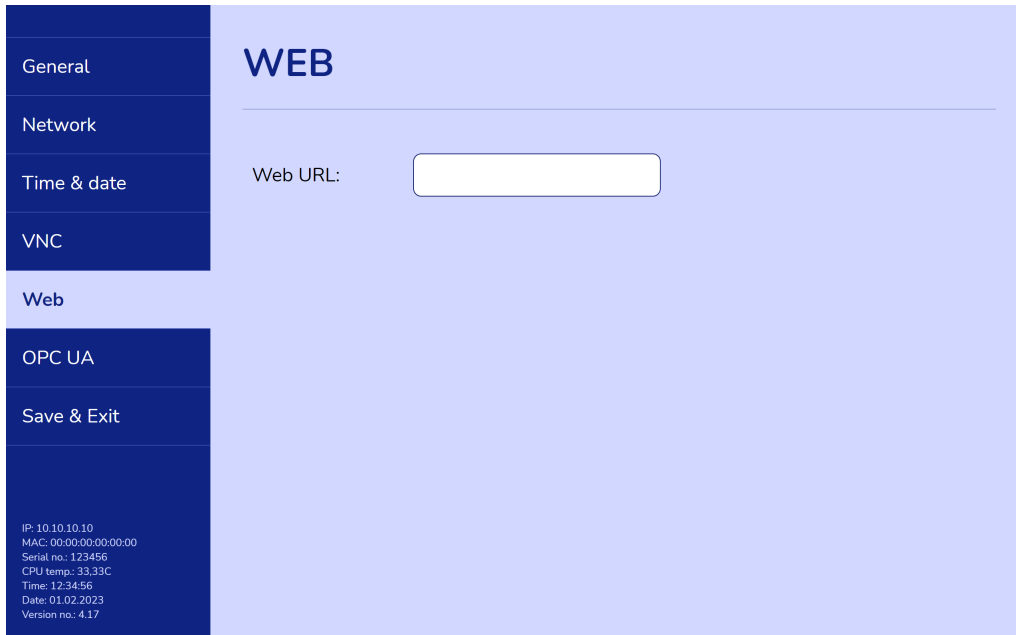
VNC client configuration when VNC viewer startup mode is configured.

*Img. 11: VNC configuration screen*

- **Server:** IP address and port of VNC server (i.e. 192.168.0.10:1234)
- **Password:** VNC server password. Blank if server does not require password.
- **Scaling:** modes of scaling application to display size of panel (aspect ratio is always preserved):
  - **Fit:** VNC server image is resized for best fit into display dimensions. Unused black vertical or horizontal stripes can be visible if VNC server aspect ratio does not fit panel aspect ratio.
  - **100%:** VNC server image is displayed in original size 1:1
  - **Cover:** VNC server image is resized so that whole display is covered. Parts of image can be cropped if aspect ratio of VNC server does not fit panel aspect ratio.
- **Hide scrollbars:** enable/disable scrollbars if the image is cropped (depends on Scaling parameter).
- **Color mode:** VNC server pixel format: RGB or BGR.
- **Touch mode:** configuration of touch events handling:
  - **Classic:** panel sends full sequence of touch events
  - **Simplified:** panel sends only touch start and touch end

### 4.1.5 Web screen

Web page configuration when Web page startup mode is configured.

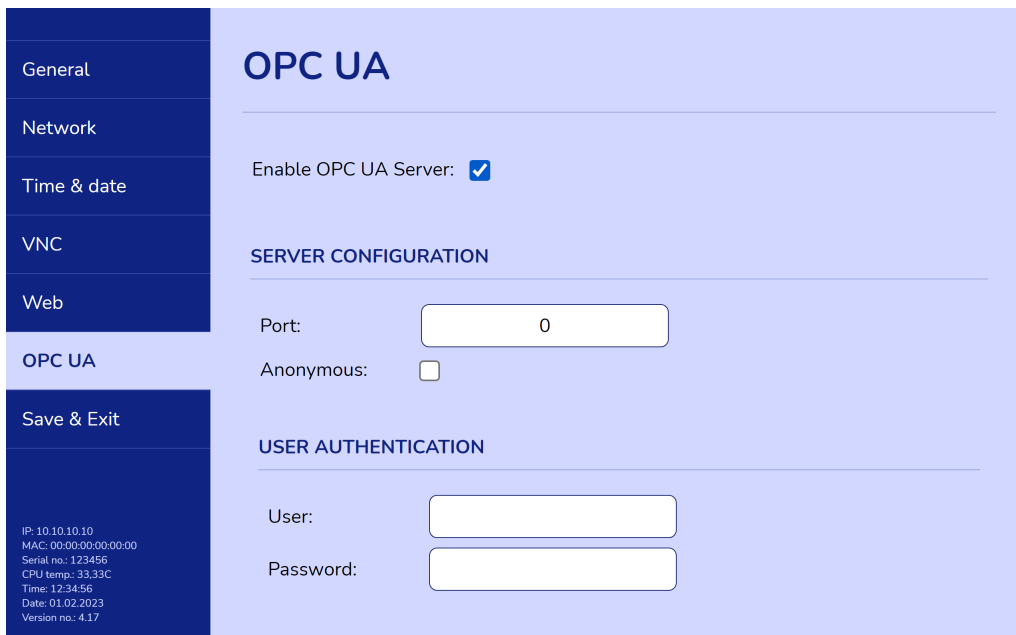


Img. 12: Web configuration screen

- **Web URL:** URL address which is opened by the browser after startup

### 4.1.6 OPC UA screen

OPC UA server configuration.



Img. 13: OPC UA server configuration screen

- **Enable OPC UA Server:** enable/disable server
- **Port:** port on which server will run
- **Anonymous:** enable/disable anonymous connection without username and password
- **User authentication:** if anonymous mode is disabled, enter username and password, which will be required to connect

## 4.1.7 Save and exit screen

Screen allows to save changes or backup/restore configuration using USB flash drive.



*Img. 14: Save and exit screen*

- **Save changes & restart:** saves all changes made in configuration and restart panel
- **Restart without saving:** forget all changes and restart panel
- **Reset to defaults:** reset all options to factory settings
- **Backup saved configuration to USB:** current configuration is saved to XML file to first connected USB flash drive
- **Restore saved configuration from USB:** configuration is restored from USB flash drive. First connected flash drive is searched for XML configuration file.

## 4.2 FW update

Firmware of Panel PC can be updated using USB flash drive. Latest firmware is available for download at following link: <https://clear-tex.com/wiki/doku.php?id=ppc10>.

Update procedure:

1. Download most recent update pack
2. Extract downloaded \*.ZIP file to USB flash drive (must be FAT32 formatted)
3. Plug flash drive to Panel PC, use top USB 3.0 port
4. Power on computer and follow on screen instructions

## 5. OPC UA

Panel can be configured as OPC UA server (see chapter [OPC UA settings screen \(page 14\)](#)).

OPC unified architecture (OPC UA) is industrial interoperability standard and general knowledge is to use this protocol with panel. Information can be found on OPC Foundation website: <https://opcfoundation.org/>.

OPC UA server can be used to read and write certain panel parameters and call functions/methods.

**After updating configuration properties, changes are not taken into effect immediately. Changes are saved using SaveConfiguration method. To apply saved configuration LoadConfiguration method have to be called.**

Methods		
Method name	Arguments	Function
AwakePanel()	-	Turns off screensaver
LoadConfiguration()	-	Panel loads last saved configuration.
SaveConfiguration()	-	Panel saves current settings (changes are not taken into effect until LoadConfiguration is called).
SetBrightness()	UInt32: Brightness	Immediately set brightness in range 20-100
SetBrightnessUnlimited()	UInt32: Brightness	Immediately set brightness in range 0-100

*Table 1: OPC UA Methods*

Configuration properties are used to make changes in panel configuration. Changes are neither saved nor applied until methods SaveConfiguration/LoadConfiguration are used.

Properties		
Property name	Function	Read/Write
<b>Configuration properties</b>		
ScreensaverIdleTime	Get/set screensaver time	RW
EnableScreensaver	Enable/disable screensaver	RW
DisplayBrightness	Get/set display brightness	RW
<b>System properties</b>		
Temperature0	Get CPU temperature	R

*Table 2: OPC UA Properties*



## 6. Directives and declarations

### 6.1 CE marking

All directives applicable to the respective product and their harmonized EN standards are met.



### 6.2 EMC Directive

Requirements of EMC Directive 2014/30/EU are met:

<b>EN 61131-2:2007</b>	Programmable controllers - Part 2: Equipment requirements and tests
<b>EN 61000-6-2:2005 + AC:2005</b>	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments
<b>EN 61000-6-4:2007 + A1:2011</b>	Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments

Declaration of conformity can be found in appendix [Declaration of Conformity \(page 18\)](#)

# EU Declaration of Conformity

<b>Manufacturer</b>	ClearTex s.r.o.
<b>Address</b>	Ampérova 649, 463 12 Liberec, Czech republic
<b>Product</b>	PanelPC
<b>Model</b>	PPC10R1

We hereby declare that the product groups referred to above that we place on the market comply with the protection requirements of the EU directives noted below. The traceability of the product groups referred to above is given for each product in the form of an explicit serial number. This declaration of conformity is issued under the sole responsibility of the manufacturer. In detail the product groups specified above fulfill the following harmonized standards:

## EMC Directive 2014/30/EU

<b>EN 61131-2:2007</b>	Programmable controllers - Part 2: Equipment requirements and tests
<b>EN 61000-6-2:2005 + AC:2005</b>	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity for industrial environments
<b>EN 61000-6-4:2007 + A1:2011</b>	Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments

## RoHS Directive 2011/65/EU

<b>EN 61131-2:2007</b>	Delegated Directive 2015/8633
------------------------	-------------------------------

Place / Date: Liberec, 2023-03-17

Petr Perner  
Managing Director

