

# TP-4800-12

12.1" Display PC



**User's Guide**

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**Contact Information**  
Teguar Corporation

# 1 Welcome!

## 1.1 What's in the box

### Overview :

- TP-4800-12 12.1" Display PC
- Thank you for choosing the TP-4800-12 product. This device is intended to serve as a computing unit in an industrial institution for general use by personnel. It can be mounted on the wall under 2 meters.
- Power adaptor and power cord provided according to final country destination.
- User Guide (PDF)

Keep your original packaging. It is designed for this display PC and provide the ideal protection during transport and storage.

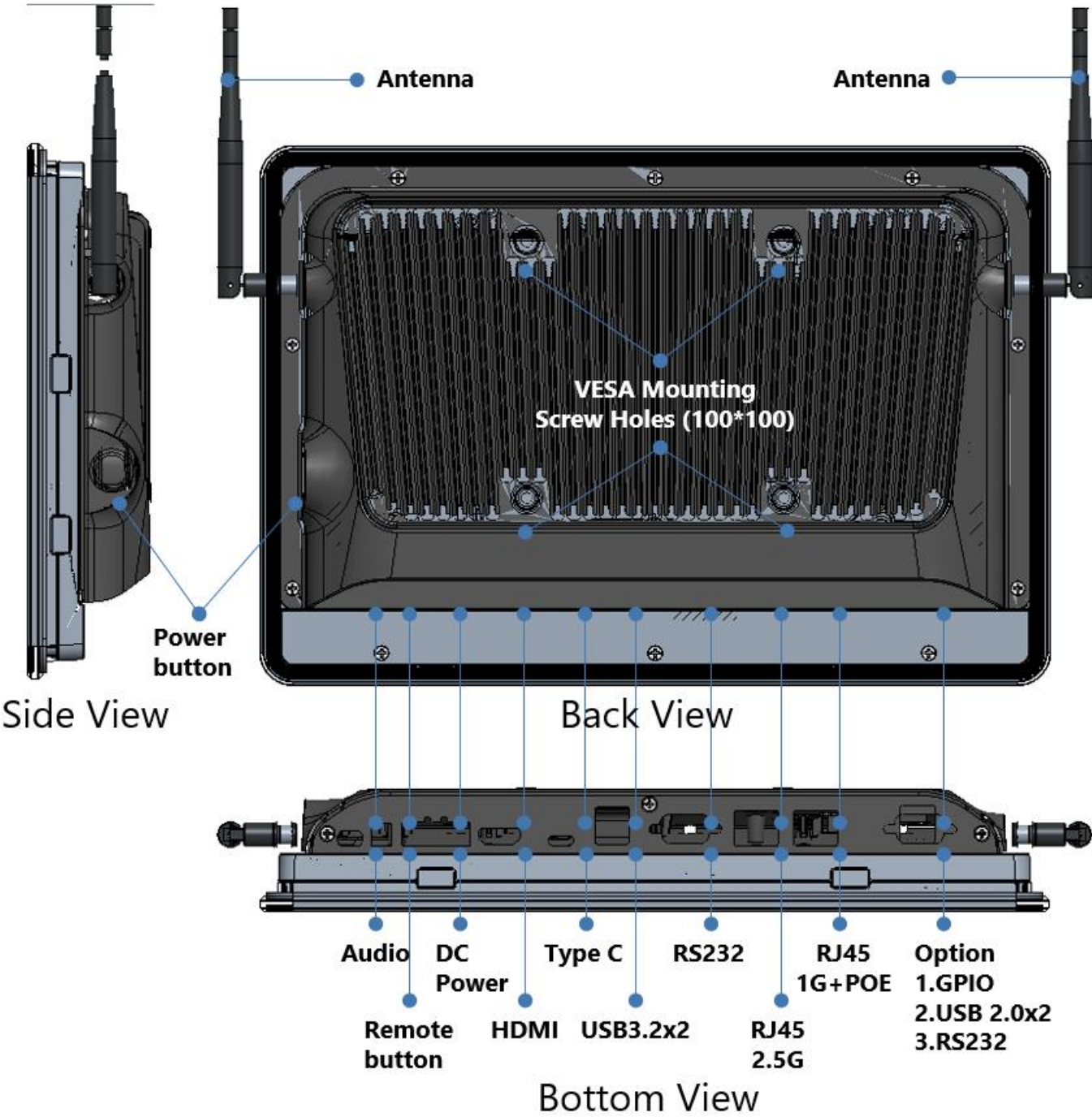
## 1.2 Product overview

### Front :



Touchscreen

Bottom :



## 1.3 Spec Table:

| Item                      | Description                                                            |
|---------------------------|------------------------------------------------------------------------|
| Processor (SoC)           | Intel ® Celeron® J6413, Quad Core @1.8GHz                              |
| BIOS                      | Insyde                                                                 |
| Operating System          | Microsoft Windows 11 Pro / Ubuntu 22.04                                |
| Networking                | Gigabit Ethernet LAN interfaces (2 ports, 1 support 2.5G)              |
| Memory                    | 8GB DDR4 SODIMM RAM                                                    |
| Storage                   | 256GB M.2, SSD module                                                  |
| LCD Panel Characteristics | 12.1" TFT LCD 1280 x 800 pixels resolution                             |
| Audio port                | 1 x (3 in1) Audio Combo Jack                                           |
| USB                       | 2 x USB 3.2 type A port<br>1 x USB 3.2 type C port, support DP and PD- |
| Button                    | 1 x Power button                                                       |
| Input device              | Touchscreen multi-touch (PCAP technology / Resistive touch)            |
| Wireless                  | Wi-Fi 6E<br>BT 5.3                                                     |
| Power source input        | 12VDC                                                                  |
| Option I/O ports          | RS232/422/485, GPIO, USB2.0*2                                          |
| Power supply              | 60W AC-DC power supply                                                 |
| Operating temperature     | 0 °C to 50 °C                                                          |
| Operating humidity        | 20% to 80% for performance / 10% to 90% for safety (non-condensing)    |
| Storage temperature       | -10 °C to 60 °C                                                        |
| Storage humidity          | 10% to 93% (non-condensing)                                            |
| Storage altitude          | 70 to 110 kPa                                                          |
| Operating altitude        | 3000 m (Max)                                                           |
| Weight                    | 2.7 Kg                                                                 |
| Dimensions (W x H x D)    | 307 x 210 x 48.5 mm                                                    |
| Certification             | Europe: CE<br>US: FCC                                                  |

# 2 Installation



**WARNING:** Read all the important safety information before installing and operating your display PC. Please refer to the dedicated chapter in this user guide.



**WARNING:** Sufficient expertise is required to install this equipment. All devices and complete setup must be tested before taking into operation.



**CAUTION:** When the display PC is assembled to the system, take care of the fixation of all cables, to avoid unwanted detachment.



**CAUTION:** The equipment is not intended to be sterilized.

## 2.1 Power on the device

### Power on the device:

- Push short the power button to power on the device:

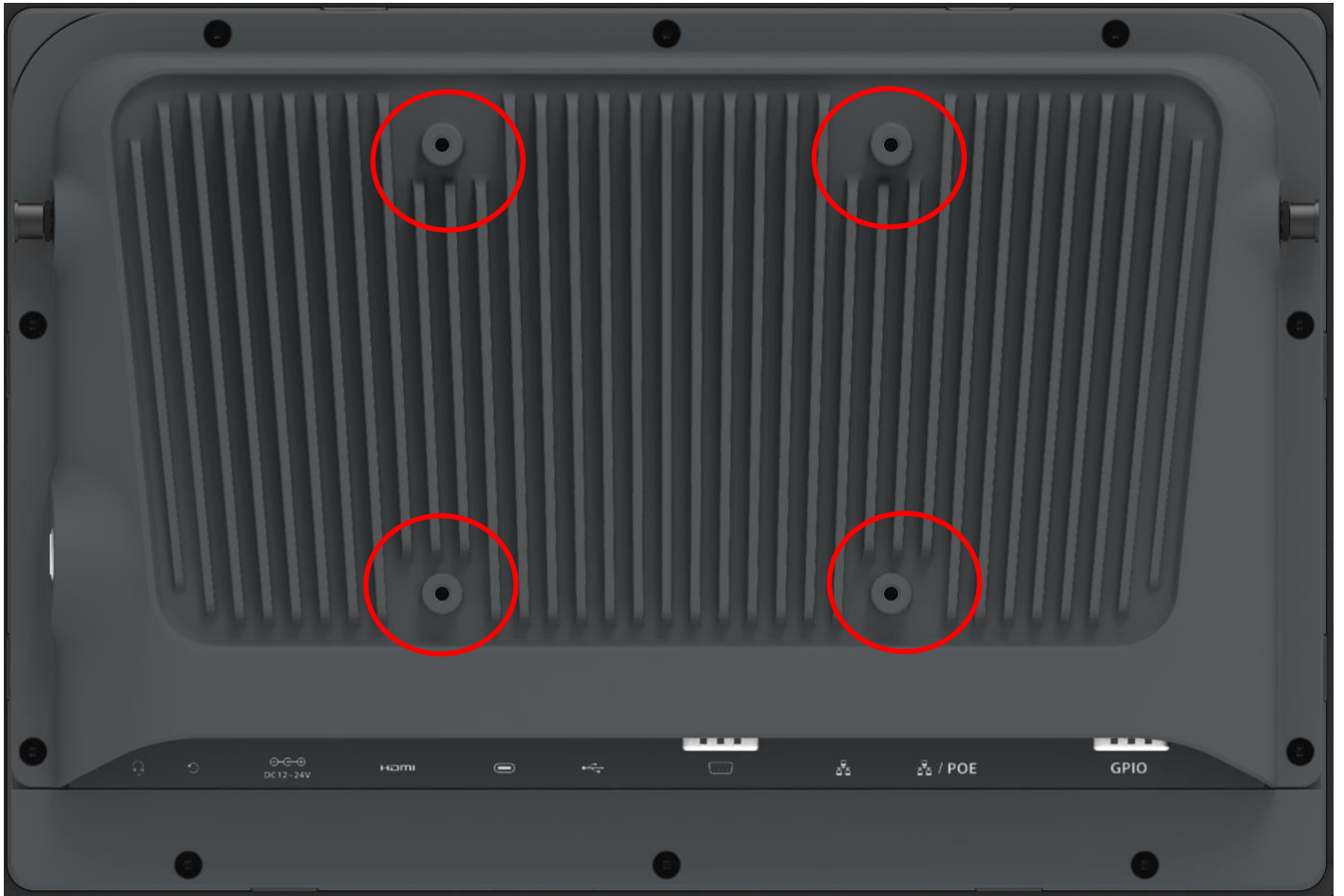


### Please use the 12V power supply provided with the shipment.

- Power requirements: The equipment must only be powered using the delivered approved 12VDC (  ) SELV power supply.
- The approved DC power supply must be powered by the AC mains voltage.
- The power supply is specified as a part of the ME equipment or combination is specified as a ME system.
- WARNING! To avoid the risk of electric shock, this equipment must only be connected to a supply mains.
- Disconnect device: Appliance inlet of Power Adapter, please do not to position the Power Adapter too far to difficultly operate the disconnection device.
- The equipment should be installed near an easily accessible outlet.
- The equipment is intended for continuous operation.
- If a different power supply will be used, further investigation for safety and EMC requirements have to be performed at system level.
- Phoenix block input is Negative(-) / NC / Positive(+)

## 2.2 Installation

Please use VESA qualified VESA 100mm mounting screws.



# 3 Maintenance

## About

- The TP-4800-12 does not require any scheduled maintenance or calibration activities.

## 3.1 Cleaning



**WARNING:** Unplug the power cable from the mains power input before cleaning the display PC.



**CAUTION:** Take care not to damage or scratch the front glass or LCD. Be careful with rings or other jewelry and do not apply excessive pressure on the front glass or LCD.



**CAUTION:** Do not apply or spray liquid directly to the display as excess liquid may cause damage to internal electronics. Instead, apply the liquid to a cleaning cloth.

### To clean the display PC:

Clean the display using a sponge, cleaning cloth or soft tissue, lightly moistened with a recognized cleaning product for equipment. Read and follow all label instructions on the cleaning product. In case of doubt about a certain cleaning product, use plain water.

### Possible cleaning solutions:

- 75% isopropyl alcohol.
- 1.6% aqueous ammonia.
- Sodium hypochlorite (bleach) 5%.
- 0.5% Chlorhexidine in 70% isopropyl alcohol.

### Do not use following products:

- Alcohol/solvents at higher concentration > 70%.
- Strong alkalis lye, strong solvents, Acid, Detergents with fluoride.
- Detergents with ammonia at higher concentration > 1.6.
- Detergents with abrasives.
- Steel wool, Sponge with abrasives, Steel blades, Cloth with steel thread.

# 4 Important information

## 4.1 Safety information

### General recommendations:

- Read the safety and operating instructions before operating the device.
- Retain safety and operating instructions for future reference.
- Adhere to all warnings on the device and in the operating instructions manual.
- Follow all instructions for operation and use.

### Electrical Shock or Fire Hazard:

- To prevent electric shock or fire hazard, do not remove cover.
- No serviceable parts inside. Refer servicing to qualified personnel.
- Do not expose this apparatus to rain or moisture.

### Modifications to the unit:

- Do not modify this equipment without authorization of the manufacturer.

### Preventive maintenance:

- Periodic maintenance inspections are essential to keep the monitor in optimum condition and ensure safe operation.
- With the monitor disconnected from the mains, perform the following periodic check:
- Check the integrity of the power cord and inspect its routing, so that it is not under the risk of being punched or cut.

### General recommendations:

- Keep the monitor clean to prolong its operational lifetime.
- LCD panel performance may deteriorate in the long term.
- Periodically check that it is correctly operating.
- Periodically check the tightness of the VESA mount screws. If not sufficiently tight, the monitor may detach from the arm, which may result in injury or equipment damage.

### Type of protection (electrical):

- Monitor provided with external power supply: Class II equipment.

### Degree of safety (flammable anesthetic mixture):

- Equipment not suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide.
- The equipment is not operable if the air oxygen content is above 25%.

### Child safety:

- Equipment not suitable for use in locations where children are likely to be present.

### Mission critical applications:

- We strongly recommend to immediately have a replacement display available in mission critical applications.

### Transient over-voltage:

- To fully disengage the power from the device, please disconnect the power cord from the AC inlet.

### **Connections:**

- To maintain compliance with EMC Regulation, use only shielded interface cables for the connection to peripheral devices.

### **Power cords:**

- Please use the power cord provided with this equipment. If a power cord is not supplied with this equipment, please contact your supplier.
- Do not overload wall sockets and extension cords as this may result in fire or electric shock.
- Mains lead protection: Power cords should be routed so that they are not likely to be walked upon or pinched by items placed upon or against them, paying particular attention to cords at plugs and receptacles.
- The power supply cord should be replaced by the designated operator only, at all time.

### **Liquids and moisture:**

- Never expose the equipment to liquids or moisture.
- Never use the equipment near water - e.g. near a bathtub, washbasin, swimming pool, kitchen sink, laundry tub or in a wet basement.

### **Moisture condensation:**

- Do not use the equipment under rapidly changing temperature and humidity conditions or avoid direct contact with cold air from air-conditioning outlet.
- Moisture may condense on the surface or inside of the equipment, or create a mist residue inside the protection plate. This is not a malfunction of the product itself, although it may cause damage to the equipment.
- If condensation exists, leave the equipment unplugged until there is no condensation.

### **Ventilation:**

- When installing the device in a cupboard or another enclosed location, heed the necessary space between the set and the sides of the cupboard.
- The LCM becomes warm during operation. This is not a malfunction. Allow adequate air circulation to reduce the temperature of the equipment.

### **Installation:**

- Place the equipment on a flat, solid and stable surface that can support the weight of at least 3 units. If you use an unstable stand, the equipment may fall, causing serious injury to a child or adult and/or serious damage to the equipment.
- Do not allow to climb or rest on the equipment.
- Provide full attention to safety during installation, periodic maintenance and examination of this equipment.
- Sufficient expertise is required for installing this equipment. Be sure to entrust the attachment of this equipment to the wall to a duly skilled technician and pay adequate attention to safety during the installation and usage.
- The manufacturer is not liable for any damage or injury caused by mishandling or improper installation.
- The equipment should be installed near an easily accessible place. Do not install or leave the unit in places subject to extreme temperatures, near a radiator, heating vent, or in places subject to mechanical vibration or shock. Subjecting the display PC to extreme temperatures, could cause deformations of the casing or malfunctions.
- Avoid to place the unit near any equipment that generates a strong electro-magnetic field.
- Avoid places subject to inordinate amounts of dust, dirt, or sand, for example near an open window or an outdoor exit.
- If setting up temporarily in an outdoor environment, be sure to take adequate precautions against airborne dust and dirt. Otherwise unrecoverable malfunctions could occur.

### **Handling:**

- Do not press on or scratch the front protection screen. Do not place a heavy object on the equipment.
- If the equipment is used in a cold place, a residual image may appear in the screen. This is not a malfunction. The screen returns to normal as the temperature rises to a normal operating level.
- If a still picture is displayed for a long time, a residual image may appear for a while. The residual image will eventually disappear.

### **Transportation:**

- Disconnect the cable from the equipment when transporting.

- When you transport the equipment, hold it firmly in both hands. If you drop the equipment, you may be injured or the equipment may be damaged.
- When you transport the equipment for repair or shipment, use the original cardboard box and packing materials.

#### **Malfunctions:**

- Disconnect the equipment's power cord from the AC inlet and refer servicing to qualified service technicians under the following conditions:
- If the power cord or plug is damaged or frayed.
- If liquid has been spilled into the equipment.
- If the equipment has been exposed to rain or water.
- If the equipment does not operate normally when the operating instructions are followed. Adjust only those controls that are covered by the operating instructions since improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.
- If the equipment has been dropped or the cabinet has been damaged.
- If the product exhibits a distinct change in performance, indicating a need for service.

#### **General warnings:**

- All devices and complete setup must be tested and validated before taking into operation.
- At end user application level, it is necessary to foresee a backup unit in case the equipment fails.
- The enclosure has to be checked upon collision damage; refer to qualified service personnel.
- The TP-4800-12 is intended for indoor use.
- Do not connect to the internet before you have installed an anti-virus software and Internet firewall.



**CAUTION:** The enclosure has to be checked upon collision damage, refer to qualified service personnel.

## **4.2 Environmental information**

### **Disposal Information:**



#### **Waste Electrical and Electronic Equipment (WEEE)**

This symbol on the product indicates that, under the European Directive 2012/19/EU governing waste from electrical and electronic equipment, this product must not be disposed of with other municipal waste. Please dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate these items from other types of waste and recycle them responsibly to promote the sustainable reuse of material resources.

#### **RoHS**

Directive 2011/65/EC on the restriction of certain hazardous substances in electrical and electronic equipment.

According to what declared by our components suppliers, this product is RoHS compliant.

## 4.3 Regulatory information

### Intended Purpose

- TP-4800-12 is a general hardware platform for use in the industrial environment. It can be used for third party software applications that provide a user interface for the systems.

### Manufacturing country

- The manufacturing country of the product is indicated on the product label (“**Made in ...**”).

### FEDERAL COMMUNICATIONS COMMISSION INTERFERENCE STATEMENT

#### FCC class B

- with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
- This device has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This device generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this device does cause harmful interference to radio or television reception, which can be determined by turning the device off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
  - Reorient or relocate the receiving antenna.
  - Increase the separation between the device and receiver.
  - Connect the device into an outlet on a circuit different from that to which the receiver is connected.
  - Consult the dealer or an experienced radio/TV technician for help.
- Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

#### RF Exposure Information (SAR)

- This device meets the government's requirements for exposure to radio waves. This device is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission of the U.S. Government.
- The exposure standard employs a unit of measurement known as the Specific Absorption Rate, or SAR. The SAR limit set by the FCC is 1.6 W/kg. Tests for SAR are conducted using standard operating positions accepted by the FCC with the EUT transmitting at the specified power level in different channels.
- The FCC has granted an Equipment Authorization for this device with all reported SAR levels evaluated as in compliance with the FCC RF exposure guidelines.

## 4.4 EMC notice

### General information

- This device is suitable for use in professional industrial facility environments only.
- With the installation of the device, use only the delivered external cables and power supply or a spare part provided by the legal manufacturer. Using another can result in a decrease of the immunity level of the device.



**WARNING:** Use of this equipment adjacent to or stacked with other equipment should be avoided because it could result in improper operation. If such use is necessary, this equipment and the other equipment should be observed to verify that they are operating normally.



**WARNING:** Use of accessories, transducers and cables other than those specified or provided by the manufacturer of this equipment could result in increased electromagnetic emissions or decreased electromagnetic immunity of this equipment and result in improper operation.



**WARNING:** Portable RF communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 inches) to any part of the TP-4800-12, including cables specified by the manufacturer.

## Electromagnetic emissions

- The TP-4800-12 is suitable for use in the electromagnetic environment specified below. The customer or the user of the device should assure that it is used in such an environment.

| Emissions test                                           | Compliance             | Electromagnetic environment – Guidance                                                                                                                                                                                      |
|----------------------------------------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| RF emissions<br>CISPR 11                                 | Group 1                | The TP-4800-12 uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.                                         |
| RF emissions<br>CISPR 11                                 | Class B                | The TP-4800-12 is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes. |
| Harmonic emissions<br>IEC 61000-3-2                      | Class D <sup>(1)</sup> |                                                                                                                                                                                                                             |
| Voltage fluctuations/ flicker emissions<br>IEC 61000-3-3 | Complies               |                                                                                                                                                                                                                             |

- This TP-4800-12 complies with appropriate EMC standards on emissions to, and interference from surrounding equipment. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
- Interference can be determined by turning the equipment off and on.
- If this equipment does cause harmful interference to, or suffer from harmful interference of, surrounding equipment, the user is encouraged to try to correct the interference by one or more of the following measures:
  - Reorient or relocate the receiving antenna or equipment.
  - Increase the separation between the equipment and receiver.
  - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
  - Consult the dealer or an experienced technician for help.

## Electromagnetic immunity

- The TP-4800-12 is tested to be used in the electromagnetic environment specified below. The customer or the user of the TP-4800-12 should assure that it is not used in an environment that exceeds the listed test levels and limits.

1. Active power for TP-4800-12 is less than 75 W

2.

| Immunity test                                                                                          | Compliance level                                                                                                                                                                                                                              | Electromagnetic environment – guidance                                                                                                                  |
|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Electrostatic discharge (ESD)<br>IEC 61000-4-2                                                         | ± 8 kV contact<br>± 2 kV, ± 4 kV, ± 8 kV, ± 15 kV air                                                                                                                                                                                         | Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%            |
| Electrical fast transient/burst<br>IEC 61000-4-4                                                       | Input AC/DC Power Ports:<br>± 2 kV<br>5 / 50 Tr/Th (ns)<br>100 Repetition frequency (kHz)<br>I/O and Communication Port:<br>± 1 kV<br>5 / 50 Tr/Th (ns)<br>100 Repetition frequency (kHz)                                                     | Mains power quality should be that of a typical commercial or hospital environment.                                                                     |
| Surge<br>IEC61000-4-5                                                                                  | Line to line: ± 0.5 kV, ± 1 kV<br>Line to ground: ± 0.5 kV, ± 1 kV, ± 2 kV                                                                                                                                                                    | Mains power quality should be that of a typical commercial or hospital environment.                                                                     |
| Voltage dips, short interruptions and voltage variations on power supply input lines<br>IEC 61000-4-11 | 0% residual voltage for 0.5 period at 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315°<br>0% residual voltage for 1 period at 0°<br>70% residual voltage for 25 periods at 0°<br>Voltage interruptions: 0% residual voltage for 250 periods at 0 | Mains power quality should be that of a typical commercial or industrial environment.                                                                   |
| Power frequency magnetic field<br>IEC 61000-4-8                                                        | 50 or 60 Hz<br>30 A/m                                                                                                                                                                                                                         | Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or industrial Environment              |
| Conducted RF<br>IEC 61000-4-6                                                                          | 3 Vrms (6 Vrms in ISM bands & amateur radio band)<br>150 kHz to 80 MHz                                                                                                                                                                        | If there is a mark on the device as shown on the right                                                                                                  |
| Radiated RF<br>IEC 61000-4-3                                                                           |                                                                                                                                                                                                                                               | symbol, the device can be located near the interference may occur  |
| Proximity magnetic fields<br>IEC 61000-4-39                                                            | 8 A/m<br>30 kHz<br>CW<br><br>65 A/m<br>134.2 kHz<br>2.1 kHz Pulse modulation<br><br>7.5 A/m<br>13.56 MHz                                                                                                                                      |                                                                                                                                                         |

|  |                         |  |
|--|-------------------------|--|
|  | 50 kHz Pulse modulation |  |
|--|-------------------------|--|

## Immunity to RF wireless communications equipment

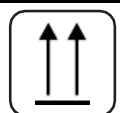
| Test frequency (MHz) | Band (MHz)  | Service                                                      | Modulation                             | Maximum power (W) | Distance (m) | Immunity test level (V/m) |
|----------------------|-------------|--------------------------------------------------------------|----------------------------------------|-------------------|--------------|---------------------------|
| 385                  | 380 – 390   | TETRA 400                                                    | Pulse modulation<br>18 Hz              | 1.8               | 0.3          | 27                        |
| 450                  | 430 – 470   | GMRS 460, FRS 460                                            | FM $\pm$ 5 kHz deviation<br>1 kHz sine | 2                 | 0.3          | 28                        |
| 710                  | 704 – 787   | LTE Band 13, 17                                              | Pulse modulation<br>217 Hz             | 0.2               | 0.3          | 9                         |
| 745                  |             |                                                              |                                        |                   |              |                           |
| 780                  |             |                                                              |                                        |                   |              |                           |
| 810                  | 800 – 960   | GSM 800/900, TETRA 800, iDEN 820, CDMA 850, LTE Band 5       | Pulse modulation<br>18 Hz              | 2                 | 0.3          | 28                        |
| 870                  |             |                                                              |                                        |                   |              |                           |
| 930                  |             |                                                              |                                        |                   |              |                           |
| 1720                 | 1700 – 1990 | GSM 1800, CDMA 1900, GSM 1900, DECT, LTE Band 1/3/4/25, UMTS | Pulse modulation<br>217 Hz             | 2                 | 0.3          | 28                        |
| 1845                 |             |                                                              |                                        |                   |              |                           |
| 1970                 |             |                                                              |                                        |                   |              |                           |
| 2450                 | 2400 – 2570 | Bluetooth, WLAN, 802.11 b/g/n, RFID 2450, LTE Band 7         | Pulse modulation<br>217 Hz             | 2                 | 0.3          | 28                        |
| 5240                 | 5100 – 5800 | WLAN 802.11 a/n                                              | Pulse modulation<br>217 Hz             | 0.2               | 0.3          | 9                         |
| 5500                 |             |                                                              |                                        |                   |              |                           |
| 5785                 |             |                                                              |                                        |                   |              |                           |

## 4.5 Explanation of symbols

### Symbols on the device

- On the device or power supply, you may find the following symbols (nonrestrictive list):

|                                                                                     |                                                                                            |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
|  | Indicates the device meets the requirements of the applicable EC directives/regulations.   |
|  | Indicates compliance with Part 15 of the FCC rules (Class A or Class B)                    |
|  | Indicates the device is approved according to the UKCA regulations.<br>表示设备已根据 UKCA 法规获得批准 |

|                                                                                     |                                                                                                                                                                  |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | Environment Friendly Use Period (EFUP), RoHS. is the period of time before any of the RoHS substances are likely to leak out                                     |
|    | RoHS compliant device                                                                                                                                            |
|    | Indicates this device must not be thrown in the trash but must be recycled, according to the European WEEE (Waste Electrical and Electronic Equipment) directive |
|    | Halogen Free device                                                                                                                                              |
|    | Indicates Direct Current (DC)                                                                                                                                    |
|    | Indicates a device that can be broken or damaged if not handled carefully when being stored.                                                                     |
|    | Indicates a device that needs to be protected from moisture when being stored.                                                                                   |
|  | Indicates the storage direction of the box. The box must be transported, handled and stored in such a way that the arrows always point upwards.                  |
|  | Indicates the maximum number of identical boxes which may be stacked on each other, where "n" is the limiting number.                                            |
|  | Packing recycle                                                                                                                                                  |

## 4.6 Legal disclaimer

### **Disclaimer notice**

- Although every attempt has been made to achieve technical accuracy in this document, we assume no responsibility for errors that may be found. Our goal is to provide you with the most accurate and usable documentation possible; if you discover errors, please let us know.

### **Trademarks**

- All trademarks and registered trademarks are property of Teguar.

## 4.7 Technical specifications

### Overview

|                                         |                                                                         |
|-----------------------------------------|-------------------------------------------------------------------------|
| Description                             | TP-4800-12                                                              |
| Processor (SoC)                         | Intel ® Celeron® J6413, Quad Core @1.8GHz.                              |
| BIOS                                    | INSYDE                                                                  |
| Operating System                        | Microsoft Windows 10 IoT LTSC                                           |
| Networking                              | Built-in Gigabit Ethernet LAN interfaces (2 ports)                      |
| Memory                                  | DDR4 RAM (module)                                                       |
| Local Storage                           | M.2, PCIE module                                                        |
| LCD Panel Characteristics               | 12.1" TFT LCD 1280 x 800 pixels resolution.                             |
| Audio System                            | 1x (3in1) Audio Earphone Jack                                           |
| USB                                     | 1 x USB 3.2 type A port*2<br>1 x USB 3.2 type C port, support DP and PD |
| Buttons and Controls                    | Power button                                                            |
| Input device                            | Touchscreen multi-touch (PCAP technology) / Resistive type              |
| Power source input                      | 12VDC Phoenix type plug                                                 |
| Option IOs                              | RS232/422/485 or GPIO or USB2.0 ports                                   |
| Protection against electrical shocks    | Class II                                                                |
| Power supply                            | external AC-DC power supply                                             |
| Operating temperature (for safety)      | 10 °C to 40 °C                                                          |
| Operating temperature (for performance) | 0 °C to 50 °C                                                           |
| Operating humidity                      | 20% to 80% for performance / 10% to 90% for safety (non-condensing)     |
| Storage temperature                     | -10 °C to 60 °C                                                         |
| Storage humidity                        | 10% to 93%                                                              |
| Storage altitude                        | 70 to 110 kPa                                                           |
| Operating altitude                      | 3000 m (Max)                                                            |
| Durability                              | Rugged anti-shock design                                                |
| Weight                                  | 2.7 kg (typical)                                                        |
| Dimensions (W x H x D)                  | 307 x 210 x 48.5 mm                                                     |
| Certifications & compliance             | Europe: CE<br>US : FCC                                                  |