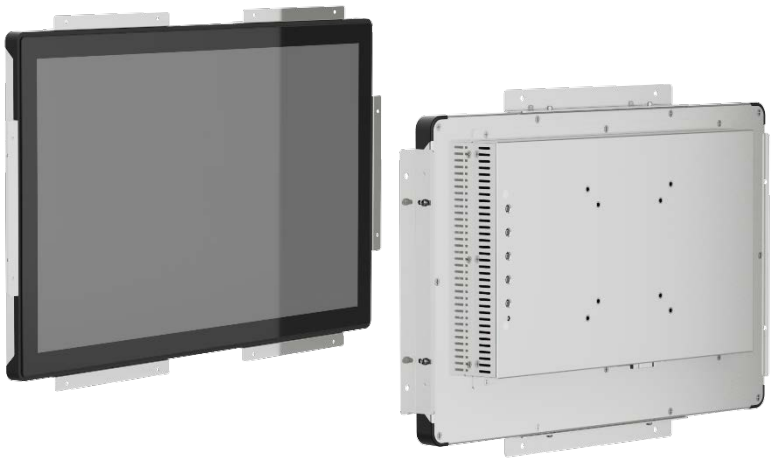
TMO Series Open-frame Touchscreen Monitors



User Manual

Version: 1.3

Revision History:

No.	Version	Description	Date
1	V1.0	First release	Jun. 9, 2022
2	V1.1	Added more models and adjusted the content accordingly	Sep. 19, 2022
3	V1.2	Modified OSD button description	Nov. 8, 2022
4	V1.3	Added language change description	May 6, 2023

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Foreword

Thank you for purchasing Vantron TMO Series Open-frame Touchscreen monitor ("the Touchscreen monitor" or "the Product"). This manual intends to provide guidance and assistance necessary on setting up, operating, or maintaining the Product. Please read this manual and make sure you understand the structure and functionality of the Product before putting it into use.

Intended Users

This manual is intended for:

- Device owners
- Technical support engineers
- Other users

Copyright

Disclaimer

While all information contained herein has been carefully checked to assure its accuracy in technical details and typography, Vantron does not assume any responsibility resulting from any error or features of this manual, nor from improper uses of this manual or the software.

It is our practice to change part numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the Product may be changed without notice.

Technical Support and Assistance

Should you have any question about the Product that is not covered in this manual, contact your sales representative for solution. Please include the following information in your question:

- Product name and PO number;
- Complete description of the problem;
- Error message showing up on the device, if any.

Vantron Technology, Inc.

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Regulatory Information

The Product is designed to comply with:

- China Compulsory Certification (CCC)
- Part 15 of the FCC Rules

Please refer to the **Appendix** for Regulatory Compliance Statements.

Symbology

This manual uses the following signs to prompt users to pay special attention to relevant information.

⚠	Caution for latent damage to system or harm to personnel
	Attention to important information or regulations

General Safety Instructions

The Product is supposed be installed by knowledgeable, skilled persons familiar with local and/or international electrical codes and regulations. For your safety and prevention of damage to the Product, please read and observe carefully the following safety instructions prior to installation and operation. Keep this manual well for future reference.

- Do not disassemble or otherwise modify the Product. Such action may cause heat generation, ignition, electronic shock, or other damages including human injury, and may void your warranty.
- Keep away from heat source, such as heater, heat dissipater, or engine casing.
- Do not insert foreign materials into the openings of the Product as it may cause the Product to malfunction or burn out.
- Use only the adapter and power cord that are approved for use with this Product. Otherwise, it may cause fire or explosion.
- Be sure that nothing rests on the power cable and that the cable is located at a place without risk of trips.
- Cut off the power before inspection of the Product to avoid human injury or product damage.

Precautions for Power Cables and Accessories

⚠ Use proper power source only. Make sure the supply voltage falls within the specified range.

⚠ Place the power cable properly at places without extrusion hazards.

Cleaning instructions:

- Power off before cleaning the Product
- Do not use caustic or aggressive liquids, vapor, or spray
- Clean with a damp cloth
- Do not try to clean exposed electronic components unless with a dust collector

⚠ Power off and contact Vantron technical support engineer in case of the following faults:

- The Product is damaged
- The temperature is excessively high
- Fault is still not solved after troubleshooting according to this manual

⚠ Do not use in combustible and explosive environment:

- Keep away from combustible and explosive environment
- Keep away from all energized circuits
- Unauthorized removal of the enclosure from the device is not allowed
- Do not change components unless the power cable is unplugged
- In some cases, the device may still have residual voltage even if the power cable is unplugged. Therefore, it is a must to remove and fully discharge the device before replacement of the components

⚠ It is recommended to avoid leaving static images on the screen for extended periods of time, as this may lead to temporary image retention or "burn-in". For best practices, you are advised to use screen savers or power-saving settings while not operating the device for an extended period.

CHAPTER 1

INTRODUCTION

1.1 Product Overview

Vantron offers open-frame touchscreen monitors that vary in screen size from 7 inches to 27 inches and resolution from 1024 x 600 to 1920 x 1080. When used with Vantron industrial boxes, such touchscreen monitors will offer more resolutions for customers to meet the requirements of application in different scenarios such as industrial control, health care, education, retail, transportation, and finance.

The TMO series features quick response time, large visible area and viewing angle to optimize the display performance. Users have the option to equip the touch screen with anti-glare, anti-reflection and anti-fingerprint coatings that offer excellent visual experience and improve human-machine interaction accuracy. Moreover, the series offers flexible installation options and OSD controls (exclusive of TMO07-DV and TMO101-DV) to enhance user experience.

Models currently available in this series include TMO07-DV, TMO101-DV, TMO101, TMO156, TMO170, TMO185, TMO190, TMO215, TMO238, and TMO270.

1.2 Packing List

The Product has been carefully packed with special attention to quality. However, should you find anything damaged or missing, please contact your sales representative in due time.

Accessories:

- Touchscreen monitor
- Side mounting brackets
- Power adapter & power cable (not applicable to TMO07-DV & TMO101-DV)
- Touch USB cable
- HDMI cable & VGA cable
- DP cable (Optional, applicable only to TMO215、TMO238 & TMO270)

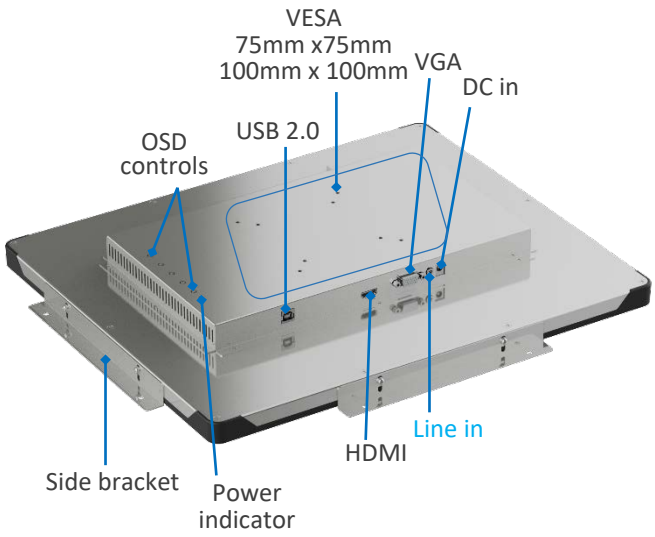
Actual accessories might vary slightly from the list above as the customer order might differ from the standard configuration options. The plastic film will protect the screen during installation, only remove the film after installation.

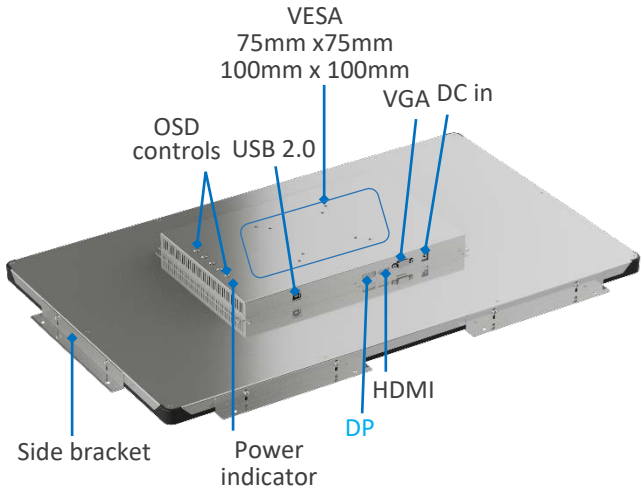
1.3 Specifications

TMO Series		
Display	Diagonal size	7”/10.1”/15.6"/17.0”/18.5”/19.0”/21.5”/23.8”/27.0” TFT LCD with LED backlight
	Aspect ratio	16:10/16:9/5:4
	Resolution	1024 x 600/1280 × 800/1920 x 1080/1280 x 1024/1366 × 768
	Brightness	350/300/250 nits
	Active area	Please refer to the datasheet of the specific model
	Contrast ratio	800:1/500:1/1000:1/3000:1
	Number of colors	262K/16.7 million
	Response time	8ms/5ms/10ms/15ms/14ms/16ms/12ms
	Viewing angle	Horizontal: 85°/170°/178° Vertical: 85°/160°/170°/178°
Touch panel	Touch point	5-point/10-point PCAP touch screen
	Touch control	Finger, stylus pen
	Cover lens thickness	1.1mm/2mm/3mm
	Surface treatment	Anti-fingerprint, tempered glass (Optional: Anti-glare/Anti-reflection)
	Light transmittance ratio	>85%
	Touch communication interface	USB 2.0/USB 3.0 (for TMO07-DV & TMO101-DV)
Video	Video interface	1 x HDMI 1 x VGA (Not for TMO07-DV & TMO101-DV) 1 x DP (Exclusive for TMO215, TMO238 & TMO270)
Audio	Audio interface	1 x Line in (Exclusive for TMO156 & TMO190)
Mechanical	Dimensions	Please refer to the datasheet of the specific model
	Weight	Please refer to the datasheet of the specific model
	Installation	VESA mount (100mm x 100mm, 75 x 75mm) Side bracket mount
	OSD (NA to TMO07-DV & TMO101)	Built-in OSD (set up with OSD buttons) Controls: Menu, Up, Down, Back, Power
Software	Power input	12V DC power adapter / Powered over the USB (for TMO07-DV & TMO101-DV, 5V/2A)
	Power consumption	<7W/8W/14W/16W/18W/28W
	Language	Chinese and English
	Adjustment of brightness, contrast and color temperature	Supported
Environment Condition	Temperature	Operating: 0℃~+40℃ Storage: -20℃~+60℃
	Humidity	RH 10%~90% (non-condensing)
	MTBF	50,000 hours
	Warranty	3 years
	ESD	ESD: ±4KV (contact) and ±8KV (air)
	Certificate	CCC, FCC, CE, UL

Please refer to respective datasheets of specific models for more information.

1.4 Product Layout





Drawings for illustration only, the device size and I/Os vary with the models.

TMO07-DV and TMO101-DV only implement an HDMI interface and a USB 3.0, and are powered over the USB port when connected to the PC/master device. They do not offer OSD control buttons or related functions. Please refer to the datasheets for more information.

The number of the side mounting brackets is dependent on the size of the touchscreen monitor.

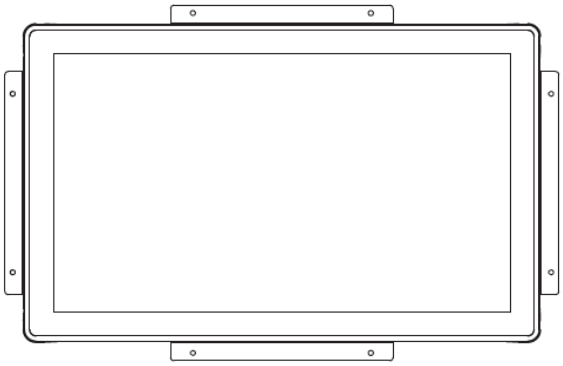
1.5 Mounting & Wiring

Please follow the following instructions to set up the device.

1. Installation:

   - Side mounting

   Use the mounting brackets and screws to install the touchscreen monitor to the desired place, and secure the screws.



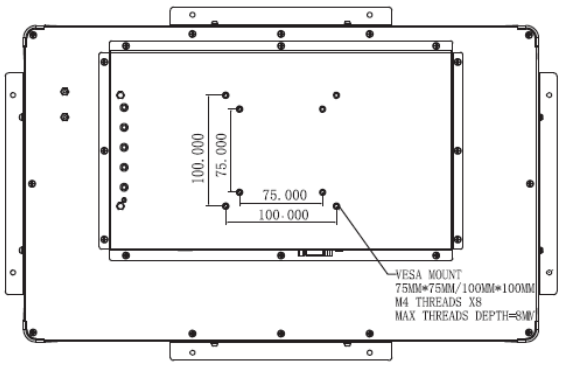
Drawing for illustration only. The number of the brackets will depend on the product model.

Screw specifications:

- M3 screws
- Thread depth: 6mm

   - VESA mounting

Vantron offers two VESA patterns on the back of the touchscreen monitor: 75mm x 75mm and 100mm x 100mm.

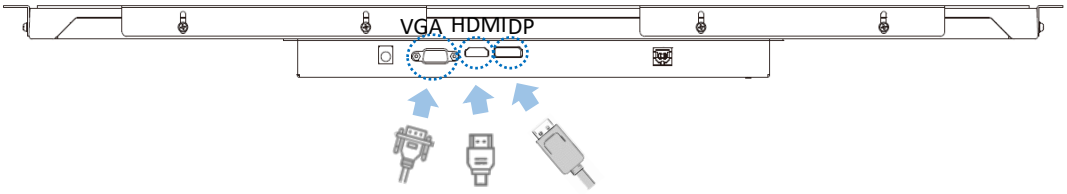


Drawing for illustration only. The VESA pattern on TMO101 is 75mm x 75mm.

Screw specifications:

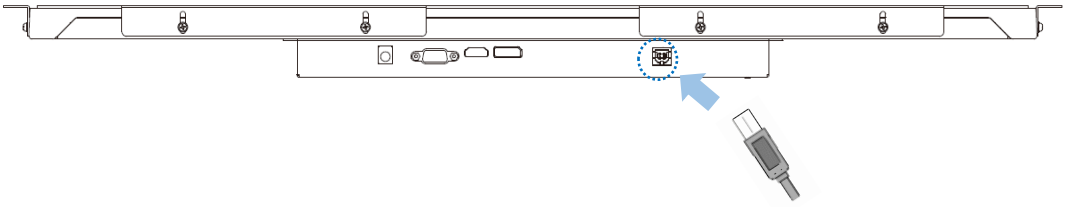
- M4 screws
- Thread depth: 8mm

2. Connect the display interface of the touchscreen monitor and the video/image source with the HDMI/VGA/DP cable;

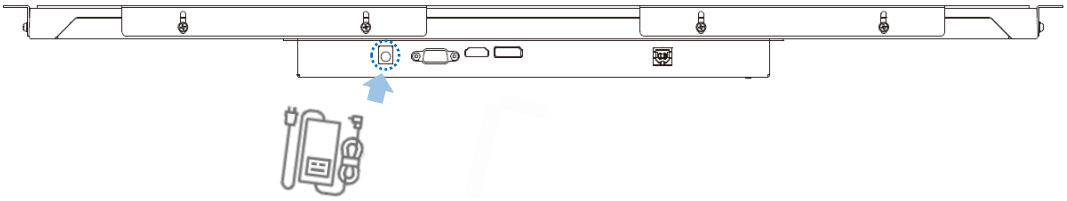


The DP port is exclusive for TMO215, TMO238 & TMO270. The display cable shall vary with the display interface, and adapter connectors are sometimes needed.

3. Connect the USB port of the touchscreen monitor and the PC/master device (e.g. Vantron IBOX3588) with the touch USB cable to enable the touch control;



4. Plug in the audio cable, if needed (only applicable to TMO156 & TMO190);
5. Connect a 12V DC power supply to the power jack of the device, and the LED indicator will turn solid red and enter the sleep mode;



6. Wait about 2-3 seconds and the LED indicator will turn solid green if the PC/master device connected to functions properly;
7. Press the OSD power button on the back of the monitor to power off the device.

TMO07-DV and TMO101-DV only implement an HDMI interface and a USB 3.0, and are powered over the USB port when connected to the PC/master device. They do not offer OSD control buttons or related functions. Therefore, the above steps are not applicable to the models.

CHAPTER 2

GETTING STARTED

2.1 Operation

This section is going to brief on the settings of the touchscreen monitor and how to troubleshoot the device in the event of a trouble/failure. Since TMO07-DV and TMO101-DV do not offer OSD and related functions, this chapter may not apply to these models.

2.1.1 Power

When the device is powered on, the power indicator will turn solid red and the monitor will get into the sleep mode. Wait about 2-3 seconds and the LED indicator will turn solid green if the PC/master device connected to functions properly. To turn off the monitor, you just need to press the OSD power button once.

The relationship between the power indicator and the touchscreen monitor is as follows:

Indicator status	Touchscreen monitor status
OFF	OFF
Solid red	SLEEP
Solid green	Working

2.1.2 Touch

The touchscreen monitor is factory calibrated and does not require manual calibration.

2.1.3 Video

Generally, the image displayed on the touchscreen monitor looks the best when the output resolution of the PC/master device matches the resolution of the touchscreen monitor.

In most cases, the touchscreen monitor will not require video adjustments. For output resolutions at non-native resolutions, users can navigate to **settings** and select the resolution scale that suits the native resolution of the touchscreen monitor.

2.1.4 On-screen Display (OSD)

OSD control buttons function as follows (not applicable to TMO07-DV & TMO101-DV):

Button	When OSD is not displayed	When OSD is displayed
Menu	OSD menu	Enter the submenu of a selected parameter
Up	OSD brightness submenu (Increase brightness)	Increase value of selected parameter/ Move to next menu upwardly
Down	OSD brightness submenu (Decrease brightness)	Decrease value of selected parameter/ Move to next menu downwardly
Back	NA	Return to previous OSD menu

2.1.5 Language change

As the device supports multiple languages, you can follow the steps below to change from one langue to another.

1. Press the **Menu** button to call the settings menu;
2. Press the **up/down** button consecutively to move to the OSD settings menu;
3. Press the **Menu** button once to enter the OSD settings menu;
4. Press the **Menu** button again to enter the language settings sub-menu, and the currently used language is displayed in red;
5. Use the **up/down** button to move to the target language;
6. Press the **Menu** button to confirm the change.

The following example showcases how to change the language from Chinese to English.

2.2 Troubleshooting

Please refer to the following solutions/suggestions in case you encounter a trouble during use of the touchscreen monitor.

If the trouble is not covered here or if the trouble persists, please contact your sales representative as indicated in **Technical Support and Assistance** in the **Foreword**. Please note that the solutions/suggestions are intended for models other than TMO07-DV & TMO101-DV. Should you have any trouble with TMO07-DV & TMO101-DV, please contact your sales representative.

1. The touch screen does NOT respond when the device is powered on.

- Check if the DC power adaptor is properly connected and functions well.

2. The screen is dim.

- Use the OSD control buttons to adjust the brightness or contrast of the display.

3. The touchscreen monitor does NOT wake up automatically and the indicator is solid red.

- Tap the screen and wait for the monitor to respond. If it fails, press the power button, or re-connect the power supply, and wait a few seconds till the indicator turns green.

4. The image is NOT properly displayed.

- Adjust the resolution/timing mode of the PC/master device to be within the allowable ranges specified for the touchscreen monitor. Or, adjust the display parameters manually with the OSD control buttons.

CHAPTER 3

DISPOSAL AND WARRANTY

3.1 Disposal

When the device comes to end of life, you are suggested to properly dispose of the device for the sake of the environment and safety.

Before you dispose of the device, please back up your data and erase it from the device.

It is recommended that the device is disassembled prior to disposal in conformity with local regulations. Please ensure that the abandoned batteries are disposed of according to local regulations on waste disposal. Do not throw batteries into fire or put in common waste canister as they are explosive. Products or product packages labeled with the sign of “explosive” should not be disposed of like household waste but delivered to specialized electrical & electronic waste recycling/disposal center.

Proper disposal of this sort of waste helps avoid harm and adverse effect upon surroundings and people’s health. Please contact local organizations or recycling/disposal center for more recycling/disposal methods of related products.

3.2 Warranty

Product Warranty

VANTRON warrants to its CUSTOMER that the Product manufactured by VANTRON, or its subcontractors will conform strictly to the mutually agreed specifications and be free from defects in workmanship and materials (except that which is furnished by the CUSTOMER) upon shipment from VANTRON. VANTRON's obligation under this warranty is limited to replacing or repairing at its option of the Product which shall, within **36 months** after shipment, effective from invoice date, be returned to VANTRON's factory with transportation fee paid by the CUSTOMER and which shall, after examination, be disclosed to VANTRON's reasonable satisfaction to be thus defective. VANTRON shall bear the transportation fee for the shipment of the Product to the CUSTOMER.

Out-of-Warranty Repair

VANTRON will furnish the repair services for the Product which are out-of-warranty at VANTRON's then-prevailing rates for such services. At customer's request, VANTRON will provide components to the CUSTOMER for non-warranty repair. VANTRON will provide this service as long as the components are available in the market; and the CUSTOMER is requested to place a purchase order up front. Parts repaired will have an extended warranty of 3 months.

Returned Products

Any Product found to be defective and covered under warranty pursuant to Clause above, shall be returned to VANTRON only upon the CUSTOMER's receipt of and with reference to a VANTRON supplied Returned Materials Authorization (RMA) number. VANTRON shall supply an RMA, when required within three (3) working days of request by the CUSTOMER. VANTRON shall submit a new invoice to the CUSTOMER upon shipping of the returned products to the CUSTOMER. Prior to the return of any products by the CUSTOMER due to rejection or warranty defect, the CUSTOMER shall afford VANTRON the opportunity to inspect such products at the CUSTOMER's location and no Product so inspected shall be returned to VANTRON unless the cause for the rejection or defect is determined to be the responsibility of VANTRON. VANTRON shall in turn provide the CUSTOMER turnaround shipment on defective Product within **fourteen (14) working days** upon its receipt at VANTRON. If such turnaround cannot be provided by VANTRON due to causes beyond the control of VANTRON, VANTRON shall document such instances and notify the CUSTOMER immediately.

Appendix: Regulatory Compliance Statements

FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates 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 equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment 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 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 radio/TV technician for help.

This device complies with Part 15 of 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.

Note: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate this equipment.

IC Statement

This device complies with ISED's licence-exempt RSSs. 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.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be chosen so that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Le présent appareil est conforme aux CNR d' ISED applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1. Le dispositif ne doit pas produire de brouillage préjudiciable, et
2. Ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radio électrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

ESD Precautions

While setting up an electronic system or handling electronic components, certain precautions and proper handling procedures should be followed to prevent ESD-induced failures. Handling the Product without proper ESD protection may destroy or damage it permanently.

- There should not be any hand contact while transporting or storing electrostatic discharge sensitive (ESDS) components. This can be achieved by placing components in static-safe containers.
- It is important to place ESDS components in static-protected areas before taking them from their packages.
- Be careful to keep ESDS components in their respective anti-static containers until they are moved to static-protected workstations.
- No human touch is permitted on the pins and leads of ESDS components or ESDS circuitries.
- While touching ESDS components or circuits, personnel should be properly grounded.
- There is no plastic, foam, or vinyl allowed in static-protected workstations.

Heat Related Concerns

The Product may become very warm during normal use. It complies with the user-accessible surface temperature limits defined by the International Standards for Safety. Still, sustained contact with warm surfaces for long periods of time may cause discomfort or injury. To reduce potential heat-related concerns, follow these guidelines:

- Keep the Product and its adapter in a well-ventilated area when in use or charging. Allow for adequate air circulation under and around the Product.
- If the Product is used for long periods, its surface can become very warm. While the temperature may not feel hot to the touch, if you maintain physical contact with the Product for a long time, your skin might suffer a low-heat injury.
- Never place the Product or the adapter on furniture or any other surface that might be marred by exposure to heat since the screen itself and the surface of the adaptor may increase in temperature during normal use.