



# User's Manual

## MD-150



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## Introduction

Welcome to your MD-150 Tablet PC.

MD-150 is a rugged tablet intended for medical/commercial uses.




MD-150 can handle any type of medical matter with IEC certified rugged medical tablet, this mobile health solution tablet features unique tools such as built-in barcode scanners, RFID, WiFi, Bluetooth , the hospital staffs, such as doctors, nurses, administration staffs, can use the device in medical treatment offices, pharmacies, medical billing or records keeping companies, dentists, and home health care professionals. For example, the hospital staffs can look

into the patients' information and record lifesaving work through the MD-150 during emergency response, the hospital staffs can use the device to check interactions with existing patients' prescriptions in the pharmacies. This go-anywhere tablet features our best combination of Field-and-Office design specs and options, including an incredibly fast Intel Tiger Lake processor, long-life, swappable batteries, and an array of great tools and security features – all in a MIL-STD-810G Rugged and Waterproof tablet.

To ensure the optimal performance of this product, please take the time to read this manual carefully.









### Explanation of Advisements

In this manual we use three (3) levels of Advisements as follows:

-  The Note symbol is used for notifying the user of something important or of something that needs special attention.
-  The Caution symbol is used to inform of something that could cause harm to, or malfunction of, the equipment.
-  The Warning symbol is used to inform of something in which there is a conceivable risk of harm to the user if the Warning is ignored.

### Symbols and Markings

This section provides information about the symbols that are used on the MD-150, its accessories, or packaging.

Symbol or Markings	Description
	Power On/Off Indicator
	Dispose of in accordance with your country's requirements.
	CE is the abbreviation of the European Communities and this mark tells customs officials in the European Union that the product complies with one or more of the EC Directives.
	This is a certification mark employed on electronic products manufactured or sold in the United States which certifies that the electromagnetic interference from the device is under limits approved by the Federal Communications Commission.
	Consult User's Manual
	UL Marking
	The product meet UL's requirements for Canada and the United States.
	Conforms to relevant Australian EMC requirements
IP23	The water prevent is 2 and the dust prevent is 3.

## 2. Exploring Your Device

### Package Contents

In addition to the primary tablet unit, your product carton should contain all of the below items.

MD-150 Tablet PC Packing Contents	
AC Adapter	适配器图片不对 
AC Power Cord	
Battery Pack	
Stylus	
Tether	
Documents	Packing Lists, etc..

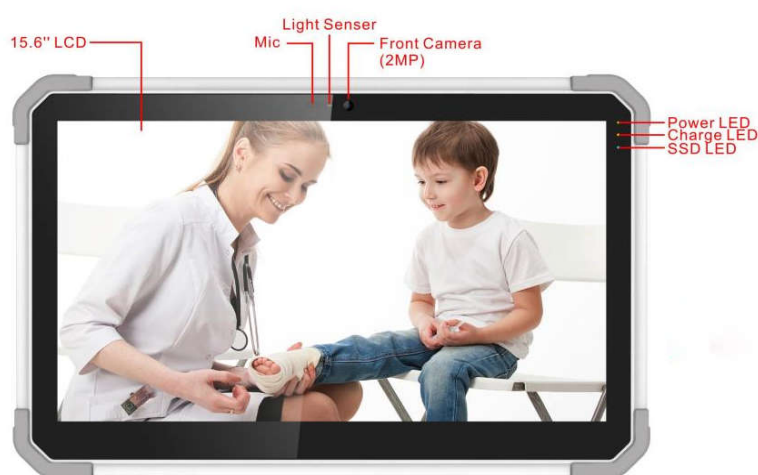
Please inspect all items. If any items are missing or appear damaged, please inform your dealer immediately.



This packing list applies to standard models. Select models may have different items.

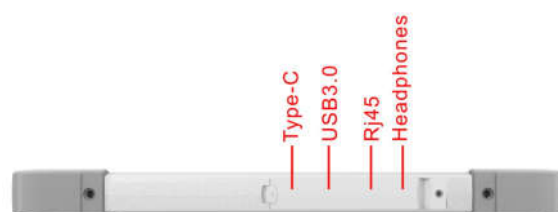
# Device Layout

## Front View



Item	Component	Description
1	MIC	Audio Recording Device
2	Light Sensor	Provides Automatic Adjustment of Screen Brightness for Various Lighting Conditions
3	Front Camera	Record Still and Video Images – 2 MP
4	Charge LED Indicator	White light Blink – Battery Charging Solid Green – Charge Complete Red Blink– Low Battery (Battery Below 10%)

## Left-side View



Item	Components	Description
5	Cooling Hole	The hole can coll down the machine
6	Type-C	Connect mobile phone,computer and other devices
7	USB 3.0	Connect any external USB device or storage volume.
8	RJ45 Port	10/100/1000 MB network port
9	Headphones	Connect headphones, speakers, or another external audio device.

### Top View



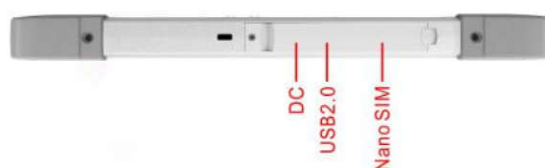
Item	Component	Description
10	Function Key 1	Programmable – Can be used for common special functions
11	Function Key 2	Programmable – Can be used for common special functions
12	Function Key 3	Programmable – Can be used for common special functions
13	Volume + Button	Increases the audio volume.
14	Volume - Button	Decreases the audio volume.
15	Power Button	Turn power On/Off – Hold 10s to Reset

### Bottom View



Item	Component	Description
16	Docking Connector	Connects the tablet with the Tablet Docking Station

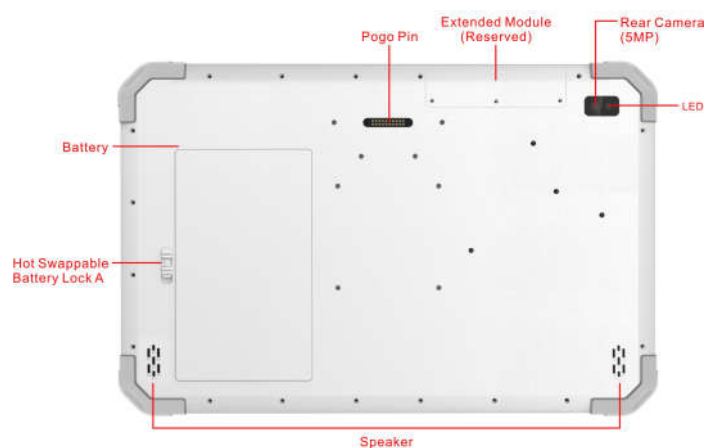
### Right-side View





Position	Components	Description
17	DC in	Direct current (DC) power for charging/using the tablet.
18	USB 2.0	Connect any external USB device or storage volume.
19		

## Rear View



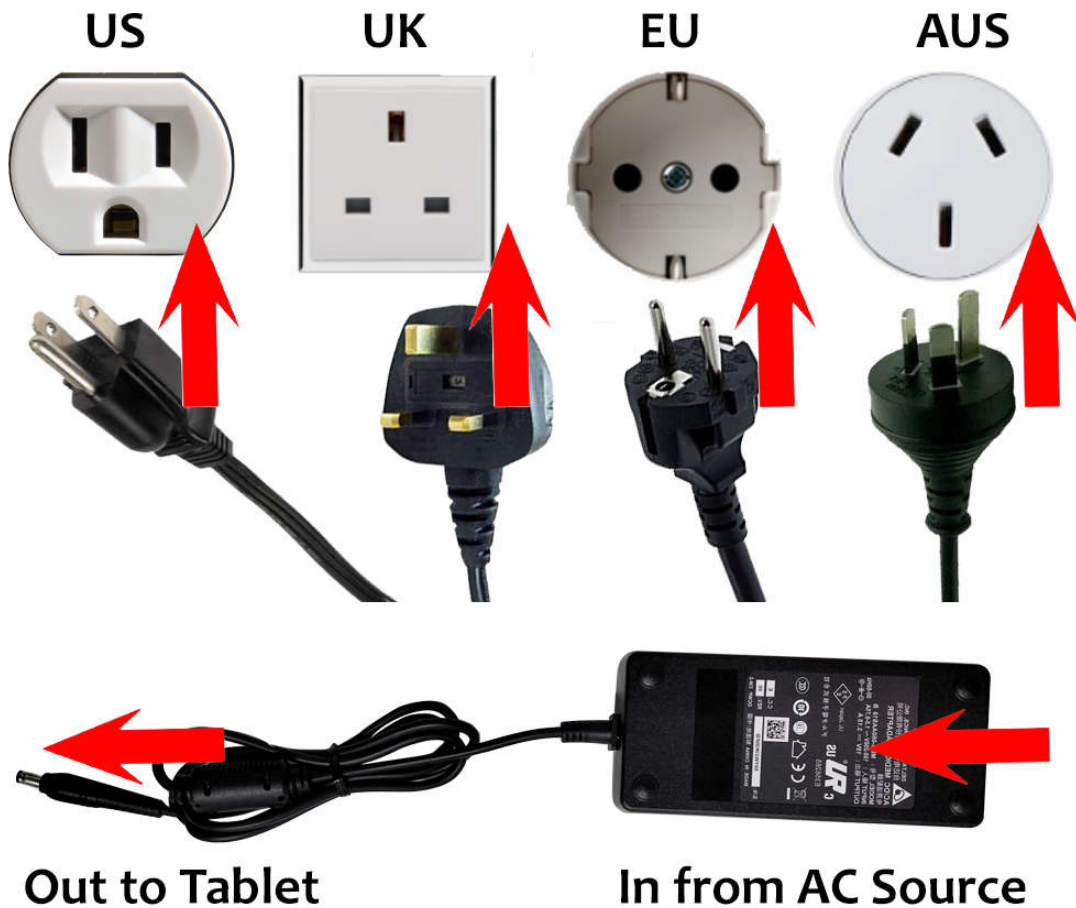
Position	Components	Description
19	Extended Module	Serve more module service (optional)
20	Pogo Pin	The connection between mobile phone antenna, mobile phone battery and mobile phone motherboard
21	LED Flash	Flash light of LED
22	Rear Camera	Allows you to use the camera function.
23	Hot Swappable Battery Lock	To lock/unlock the hot swappable battery
24	Hot Swappable Battery	Supplies power to your Tablet PC when external power is not connected.
25	Cooling Vent	The channel to cool down the machine
26	Speakers	Sends out sound and voice.

## 4. Managing Device Power

### AC adapter

The AC adapter accepts 100-240VAC Input.

A standard US polarized, grounded three-pin plug adapter is included. International plug AC adapters are available for certain regions.




Use only the AC adapter included with your Tablet PC. Using other AC adapters may damage the device.


## Battery Pack


The MD-150 device has one small, permanent, internal battery and one hot-swappable battery. When hot swappable battery has low voltage and needs to be replaced, the built-in small battery will power the tablet for up to 10 minutes.

### To charge the Battery Pack:

1. Connect the power cable to the charging port on the device.
2. Connect the power adapter to an electrical outlet and charge the tablet until the battery is fully charged.
3. After your device is fully charged, disconnect the charger from both the device and the electrical outlet.
4. Additional hot-swappable battery can be charged independently of the Tablet PC by placing the battery into a docking station with a battery charging bay (available separately).

 NOTE: To prevent damage to batteries, please see Section 8: Safety

 Battery life naturally degrades over time. Failure to follow instructions for recommended operating temperatures, charge and discharge rates, and other instructions may accelerate battery decay rates. If your tablet battery will not accept or hold a satisfactory charge, it may need to be replaced.


 For battery storage and charging temperatures, see Section 8: Safety

## Checking the Battery Level

To check the battery charge level of the MD-150, you may use the battery monitor within Windows operating system or the voltage gauge of hot swappable battery pack.

When the hot swappable battery pack is not installed in the Tablet PC and you want to know the battery level, press the Battery Test (1) button. The gauge will display the current battery charge level.







 Any battery level indication is an estimated result. The actual operating time can be different from the

estimated time, depending on how you are using the Tablet PC.

### Hot Swapping the Battery Pack

The MD-150 Tablet PC battery can be replaced without shutting down the tablet or interrupting your work, by use of the built-in battery. The built-in battery can sustain power for up to 10 minutes, during which period the swappable battery must be changed to prevent loss of function.

To swap the battery, lay the tablet on a flat surface, and pull the two tabs indicated towards the edges of the tablet. The battery will pop loose and a replacement can be slid into place.

-  The appropriate temperature range for hot swapping the battery pack is between -10 °C (14 °F) and 50 °C (122 °F).
-  Check the Bridge Battery Indicator after unlocking the battery latch. Replace the battery pack only when the indicator lights in green. A red light means the internal bridge battery level is too low for you to safely hot swap the battery pack.
-  When the battery latch is unlocked, the display brightness level will be fixed at a low level and cannot be adjusted
-  If the hot swappable battery pack is not inserted within 30 minutes, the Tablet PC enters Hibernation mode or may switch off entirely.

## Internal Battery

The internal battery is not user-replaceable and is not visible to the operating system. It never functions as the power source as long as the hot swappable battery pack is installed. It enables the hot-swapping function, since it provides power only when the battery pack is removed. The internal battery should not be used to power the tablet during regular operation.



By default, the internal battery is charged by external AC power (if connected) or the main battery pack if it is not fully charged. To preserve battery life, it is possible to set the internal battery to charge only when connected to an AC Power Source.

## 5. Using optional features

### USING GPS

This device may include an internal GPS module for navigation. Please follow the instructions in the specific software for your application for GPS applications. For more details, see Technical Specifications in Appendix A.

- If you want to check whether the GPS hardware is working properly, you may use eController app to test. See Chapter 6: eController App and its Applications.

### Using the Digitizer Pen

MD-150 Tablet offers either a standard, passive stylus (Digitizer Pen) or an active stylus.



Standard stylus

The standard stylus can be used for writing and selecting elements on the screen. The active stylus works together with a specialized touch sensor panel to support functions like Double Click, Palm Reject, Hover, Accurate Drawing, Legal Signatures, and other special functions. For more details, see Technical Specifications in Appendix A.

To use double click function, Tap the desired point on the screen twice in quick succession with the pen.

When using the Hover Function, if the stylus is hovered slightly above the screen, a hover indicator will appear.



In Hover Mode, please keep the pen within 3mm of the touch screen, otherwise the mark might not be displayed in the screen.

1. **Palm Rejection Function:** when you are writing using an active digitizer, a finger or the palm on the screen won't produce input, as the screen recognizes a difference between the input from your hand and input from your stylus.

## 7. Product Care

### Temperature & Humidity

#### General Use - Operating temperature

The MD-150 is best kept in dry conditions at room temperature. The recommended range for temperature and the humidity value for the device is as follows:

- Ambient temperature: 0°C to 35°C (32°F to 95°F)
- Relative humidity: 10% to 90% (no condensation on the device)
- Atmospheric Pressure: 80 kPa to 106 kPa (600 mmHg to 795 mmHg)

#### Transportation and Storage

For transportation and storage, the recommended range for temperature and the humidity value for the device is as follows:

- Temperature: -20°C to 60°C (-4°F to 140°F)
- Relative humidity: 10% to 90% (no condensation on the device)

### Transporting the MD-150 Device

Disconnect all the cables from the MD-150 while carrying the device.

When you transport the device for any reason, use the original casing and packaging materials. It is recommended to keep the original packaging materials for the MD-150.

If the device needs to be returned to Device Manufacturer for Warranty related issues or repair, it is beneficial that the original packaging or equivalent is used for shipping. Most shipping carriers require at least 2 inches of packing material around the device.



Due to Joint Commission regulations, any shipping materials including boxes sent to Device Manufacturer must be discarded.

## 8. Safety



The MD-150 device has been tested and approved as compliant to all the Specifications and Standards listed in Appendix B Compliance Information, and in the Appendix A Technical Specifications. Nevertheless, in order to ensure safe operation of your MD-150 device, there are a few safety warnings to bear in mind:



Do not disassemble this product. You may receive an electric shock, or foreign matter may enter and result in a fire. If a malfunction or trouble occurs, immediately turn the power off and unplug the AC power source. Then contact your supplier's technical support office for repair.



Do not service or perform maintenance on the device while the device is in use. Make sure to shut the device down and unplug all cables before starting and service or maintenance work on the device.

### 8.1 Power Supply and Batteries

The MD-150 device contains two rechargeable batteries. All rechargeable batteries degrade over time. Thus, the possible usage times for the MD-150 after a full charge can become shorter over time than when the device was new.



The MD-150 device uses a Li-ion Polymer battery.

If you are in a hot environment, be aware that it can affect the ability to charge the battery. The internal temperature must be between 0 °C/32 °F and 45 °C/113 °F for the battery to charge. If the internal battery temperature rises above 45 °C/113 °F the battery will not charge at all.



Avoid exposing the MD-150 device to fire or to temperatures above 60 °C/140 °F. These conditions may cause the battery to malfunction, generate heat, ignite or explode. Be aware that it is possible, in a worst-case scenario, for temperatures to reach greater than those stated above in, for example, the trunk of a car on a hot day.

Only charge the MD-150 battery in an ambient temperature of 0 °C/32 °F to 45 °C/113 °F.



Only qualified personnel with appropriate service documentation should replace the backup battery. Otherwise, personal injury or equipment damage could occur.



Use only the supplied power adapter to charge the MD-150 device. Using unauthorized power adapters may severely damage the MD-150 device.



For safe operation of the MD-150 device, use only charger and accessories approved by Device Manufacturer.

If the Power Supply Cord is damaged it needs to be replaced by Service Personnel only. Do not use the Power Supply Cord until replaced.



Disconnect the AC power plug of the Power adapter from the wall socket when not charging the device and disconnect the power cable from the device.



Special regulations apply to shipping devices containing Li-ion Polymer batteries. If dropped, crushed, or short-circuited, these batteries can release dangerous amounts of heat, may ignite, and may be dangerous near fires.



The plug/adapter plug pins insulate the device from the main supply. Do not position the device in a position where it is difficult to disconnect the device from the supply mains to safely terminate operation of the device.

## 8.2 Temperature



Due to use in direct sunshine or in any other hot environment the MD-150 device may have hot surfaces. There is a built-in temperature sensor that monitors the temperature. If the sensor detects high internal temperature, the device will automatically trigger a Windows Shut Down or Hibernate (depending on Windows Power Button configuration). It may take a while before MD-150 device can be restarted as the unit may first need time to cool down.



### 8.3 Electricity



The device contains no user serviceable parts. Do not open the case of the MD-150 Tablet Device. Doing so will void the product warranty and may expose you to electrical hazards.

### 8.4 Software



Using an antivirus program is strongly recommended.



Software other than that which is pre-installed on the MD-150 is installed at the user's own risk. External software could cause the MD-150 to malfunction and might not be covered by the warranty.

### 8.5 Magnetic Field



The MD-150 device contains magnets. Magnetic fields may interfere with pacemakers, defibrillators, or other medical devices. As a rule, maintain a minimum distance of 6 inches (15 centimeters) between any item with magnets and your heart device.

### 8.6 Third Party



Any use of the MD-150 outside the intended use and together with any third-party software or hardware that changes the intended use voids the responsibility of the device manufacturer

Being a medical device, parts connected for a SIGNAL INPUT/OUTPUT must be compliant to the Medical IEC standard 60601-1.

## 9. Trouble shooting

In most cases, restarting your device will cure any problem. To restart your device, Select Start and then select Power - Shut down. If your device has crashed, hold down the power button or remote power button for 5+ seconds to hard shutdown. Press it again to turn it back on.

If this does not fix the problem, contact your supplier.

Please have your serial number ready. This can be found on the back of your device.

## 10.Contact US

Factory Name: Estone Technology LTD

Address:2F,Building No.1, Jia'an Industrial Park, No.2 Long Chang Road,

Bao'an, Shenzhen 518101, China.

## 11.Maintenance

### Cleaning the device

Before cleaning the device, shut it down and unplug all cables. Use a soft, slightly damp lint-free cloth. Avoid getting moisture in openings on the device. Don't use window cleaners, household cleaners, aerosol sprays, solvents, alcohol, or abrasives to clean the device.

#### Disposing of the Device

Do not dispose of the device in general household or office waste. Follow your local regulations for the disposal of electrical and electronic equipment.

## Appendix A Technical Specifications

<b>IP Rating</b>	<b>IP-23 Waterproof</b>
	Drop: 43FT drop resistant on 4 corners to plywood ( <del>MIL-STD-810G</del> )
	Shock resistant: MIL-STD-810G, method 516.6, procedure I
	ESD Protection: 4KV touch, 8KV air
	Ultra-LCD protection (Option)
<b>Processor</b>	Intel 11Gen Tiger Lake i7-1165G7 4 Cores, 8 threads, 12M Intel smart cache max turbo to 4.7GHz Intel 11Gen Tiger Lake i5-1135G7 4 Cores, 8 threads, 8M Intel smart cache max turbo to 4.2GHz Intel 11Gen Tiger Lake i5-1145GRE 4 Cores, 8 threads, 8M Intel smart cache <del>1.5GHz</del> , max turbo to 4.1GHz <del>Intel 11 Gen Tiger Lake i7-1185G7E for optional</del> <del>4 Cores, 8 threads, 12M Intel smart cache</del> <del>1.8GHz, max turbo to 4.4GHz</del>
<b>GPU</b>	Intel® Iris® Xe Graphics, max frequency to 1.350GHz
<b>OS</b>	Windows 11 Pro, 64bit
	Windows 10 Pro/LTSBC, 64bit
	Linux (for custom project)
<b>Security</b>	Intel® AES New Instructions Support Support TPM 2.0
<b>System Memory</b>	8GB LPDDR4X Option: 16GB LPDDR34X
<b>Storage</b>	PciE Gen 4 SSD, 256GB, 512GB/1TB for optional
<b>Button</b>	Power on/off (Hold 10s will reset system) Vol+ and Vol- button 32x programmable buttons
<b>LCD</b>	15.6" IPS LCD 1920 x 1080 HD Resolution (16:9) 300NIT backlight Wide view angle +/- 85° Contrast ratio: 800: 1
<b>Touch Screen</b>	Capacitive 10-point touch Auto-sensing technology, configurable to wet and glove touch Ultra optical bonding Harden chemical glass User replaceable anti-glaring film
<b>Digitizer (Option)</b>	Active Capacitive Coupled, Pressure Level: 256~1024, Support double click, hover, palm rejection, High accuracy for legal signature Compliant to Microsoft Pen Protocol v.2.0
<b>Audio</b>	Built-in 1 microphone Two 4ohm 1.5W speaker
<b>Camera</b>	Front camera: 2MP Rear Camera: 5MP with Auto Focus

	Option: 8MP rear camera
<b>WiFi</b>	Support WIFI6 802.11 a/b/g/n/ax support 2.4G&5G
<b>Bluetooth</b>	Bluetooth 5.2
<b>4G LTE (option)</b>	Accept most 4G LTE module in M2 Interface Sierra EM7455 4G LTE Module 4G: Cat-6, Frequency Bands: B1-B5,B7,B8,B12,B13,B20,B25, B26, B29, B30, B41 3G: HSPA+, UMTS, Frequency Bands: B1, B2, B3, B4, B5, B8 CE, FCC, GCF, IC, NCC, PTCRB Verizon, Sprint, AT&T certified
<b>GPS</b>	UBlox NEO-M10
<b>Sensors</b>	Gyroscope Ambient light sensor G-sensor Compass
<b>Battery</b>	Dual hot-swappable batteries 7.7V 3896mAH, 30Wh with one battery Battery charging time: 5 hours
<b>I/O</b>	1x USB 3.0 type C @1000mA output (only support USB 3.1 and display) 1x USB 3.0 type A, @1500mA output 1x USB 2.0 type A, @1000mA output 1x Nano SIM slot (Internal) 1x 10/100/1000M RJ45 port 1x 3.5mm Audio jack 2x Docking connector (2x 2435 pin, 19V DC input, 1x USB 3.0, HDMI output) 1x PoGo pin connector on rear surface(24pin, support USB 3.0 and charging)
<b>Mechanical</b>	Front chassis: Plastic Rear chassis: Al Foot pad: LSR Anti-microbial with chassis/touchscreen for optional Dimension: 402.8*262.6*20.5 23.13mm Weight: 2.2kg
<b>VESA mount</b>	75mm*75mm, M4 Screw
<b>AC adaptor</b>	100 -240V AC in, output 19VDC 5.253.15A, standard US plug Option: multi-national AC plugs and medical AC adapter
<b>Operation temperature</b>	-10° - 55°C
<b>Storage temperature</b>	-20° -60°c
<b>Thermal shock</b>	-30° -70°c within 5 minutes, no operating
<b>Humidity</b>	1% to 95% non-condensing, -30° to 60°c, 5 cycles of 48 hours
<b>ESD Protection</b>	8KV contact, 15KV air
<b>Tablet regulatory</b>	FCC CE IEC 60601-1 IEC60601-1-2
<b>Battery regulatory</b>	CE/UL/MSDS/CB/IEEE/UN38.3 IATA
<b>Optional accessory</b>	
<b>Docking</b>	Desktop docking station 19VDC 3.423.15A DC in 2x USB 3.0, type A, 1x HDMI type A 1x DB9 RS232 COM port

	1x RJ-45 ethernet port, 10/100/1000MB
	1x HDMI Type A
<b>Handle</b>	Plastic handle
<b>Charging station</b>	4 in 1 battery charger

## Appendix B Compliance Information

### B1 FCC Statement

This device complies 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.

### Part 15B Equipment

This equipment 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 equipment 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 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.



Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment. Modifications not expressly approved by Device Manufacturer could void the user's authority to operate the equipment under FCC rules.

### FCC RF Radiation Exposure Statement:

- This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
- This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This device was tested for typical hand-held operations with the device contacted directly to the human body to the sides of the device. To maintain compliance with FCC RF exposure compliance requirements, avoid direct contact to the transmitting antenna during transmitting.

This equipment complies with FCC/IC/EU RF radiation exposure limits set forth for an uncontrolled environment. The highest SAR value for the MD-150 device is <1.562W/kg.

In order to maintain compliance as a Class 1 Medical device, the switches that are used in combination with the MD-150 device must fulfill the isolation requirements of IEC/EN 60601-1 based on 15 VDC. They must be electrically floating switches (switches that are not grounded).

## **B2 CE Statement**

This equipment complies with the requirements relating to electromagnetic compatibility, the essential protection requirement of Electromagnetic Compatibility (EMC) Directive 2014/30/EU on the approximation of the laws of the Member States relating to electromagnetic compatibility and Radio Equipment Directive (RED) 2014/53/EU to meet the regulation of the radio equipment and telecommunications terminal equipment.

## **B3 Directives and Standards**

The MD-150 complies with the following directives:

- Medical Device Regulation (MDR)
- Low voltage Directive 2014/35/EU
- Electromagnetic Compatibility (EMC) Directive 2014/30/EU
- Radio Equipment Directive (RED) 2014/53/EU
- RoHS2 Directive 2011/65/EU
- WEEE Directive 2012/19/EU
- Reach Directive 2006/121/EC, 1907/2006/EC Annex 17
- Batteries Directive 2013/56/EU

The device has been tested to comply with FCC, IEC 60601-1, IATA/IEC62133, and other relevant standards for the intended markets.