

User Manual

USM-500

USM-500-xxxxxxxxxxxx

ADVANTECH

Enabling an Intelligent Planet

Copyright

The documentation and the software included with this product are copyrighted 2019 by Advantech Co., Ltd. All rights are reserved. Advantech Co., Ltd. reserves the right to make improvements in the products described in this manual at any time without notice. No part of this manual may be reproduced, copied, translated or transmitted in any form or by any means without the prior written permission of Advantech Co., Ltd. Information provided in this manual is intended to be accurate and reliable. However, Advantech Co., Ltd. assumes no responsibility for its use, nor for any infringements of the rights of third parties, which may result from its use.

Acknowledgements

Intel and Pentium are trademarks of Intel Corporation.

Microsoft Windows and MS-DOS are registered trademarks of Microsoft Corp.

All other product names or trademarks are properties of their respective owners.

Instructions for the User

The document combines text and illustrations, providing a comprehensive overview of the system. The information is presented as a sequential step of actions, allowing the user to learn directly how to use the device.

The text provides explanations and instructs the user step-by-step in the practical use of the product, with short, clear instructions in an easy-to-follow sequence.

Warnings, Cautions and Notes

Warning! A **WARNING** statement provides important information about a potentially hazardous situation which, if not avoided, could result in death or



serious injury.

Caution! A **CAUTION** statement provides important information about a potentially hazardous situation which, if not avoided, may result in minor or moderate injury to the user or patient or in damage to the equipment or other property. Please contact a qualified technician or your retail provider for its replacement. Do not do it by yourself.

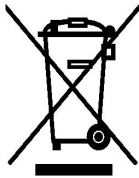


Note! A **NOTE** provides additional information intended to avoid inconveniences.



Within the European Union

EU-wide legislation, as implemented in each Member State, requires that waste electrical and electronic products carrying the mark (left) must be disposed of separately from normal household waste. This includes monitors and electrical accessories, such as signal cables or power cords. When you need to dispose of your display products, please follow the guidance of your local authority, or ask the shop where you purchased the product, or if applicable, follow any agreements made between yourself.



Part No.
Printed in Taiwan

Edition 1
July 2019

Product Warranty

WHAT'S COVERED & HOW LONG

Standard warranty covers two (2) - years structural components, two (2) - years for computer system and electronics, two (2) - year for Battery system.

- Warranty coverage begins on product's date of delivery. Standard warranty does not cover problem resulting from product abuse, negligence/accident, misuse, improper operation, post-delivery physical damage, and/or product modifications without Advantech's prior written approval.
- External peripherals (including: computing equipment/devices, monitors, keyboards, mouse, are not included in this warranty.

Advantech shall not be liable for any consequential or incidental damages.

HOW WE HELP YOU

Support services provided along with the standard warranty must be requested within the expressed warranty time frame for the product element.

- Technical support may request customer collaboration and assistance during diagnosis to provide for the next business day service resolution. Typically, this requires, but is not limited to:
- Identifying a primary contact representative (with phone number and e-mail address) to work with Advantech and answer relevant questions.
- Providing the serial ID number and access to the product.
- Performing basic troubleshooting activities as directed by Advantech Technical Support.

Resolution methods can include, but are not limited to, any of the following:

- Verbal/written instructions to correct the problem.
- Shipping of replacement parts.
- On-site dispatch of an Advantech authorized service technician.

If needed, Advantech will involve its design engineers or supplier partners for resolution assistance and customer's satisfaction. Determination for resolving warranty issues will be at Advantech's sole discretion.

Safety Instructions

1. Strictly follow these instructions for use; please read these safety instructions carefully.
2. Keep this user manual for later reference; any use of the product requires full understanding and strict observation of all portions of these instructions. Observe all.
3. Repair of the device may also only be carried out by trained service personnel.
4. Advantech recommends that a service contract be obtained with Advantech Service and that all repairs also be carried out by them. Otherwise the correct functioning of the device may be compromised.

Warning! *Because of the danger of electric shock, never remove the box of a device while it is in operation or connected to a power outlet.*



5. If one of the following situations arises, get the equipment checked by service personnel:
 - The power cord or plug is damaged.
 - Liquid has penetrated into the equipment.
 - The equipment has been exposed to moisture.
 - The equipment does not work well, or you cannot get it to work according to the user manual.
 - The equipment has been dropped and damaged.
 - The equipment has obvious signs of breakage.
6. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning and keep this equipment away from humidity.

Caution! *To avoid short-circuits and otherwise damaging the device, do not allow fluids to come in contact with the device. If fluids are accidentally spilled on the equipment, remove the affected unit from service as soon as possible and contact service personnel to verify that patient safety is not compromised.*



7. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.

Caution! *Do not leave this equipment in an uncontrolled environment where the storage temperature is below 0° C or above 50° C. This may damage the equipment.*



8. Grounding reliability can only be achieved when the equipment is connected to an equivalent receptacle marked “Hospital Only” or “Hospital Grade”.
9. Use a power cord that matches the voltage of the power outlet, which has been approved and complies with the safety standard of your particular country.
10. If the integrity of the protective earth conductor is in doubt. Please turn off the power switch.
11. To disconnect this product from the mains supply disconnects the mains plug from the socket outlet. The power supply is regarded as part of this equipment.

12. Make sure user not to contact SIP/SOPs and the patient at the same time.
13. Do not switch on/off the power switch of the battery system during operation.

Warning! *To avoid risk of electric shock, this equipment must only be connected to a supply mains with protective earth.*



Warning! *No modification of this equipment is allowed.*



14. The power cord for use on the device shall be no less robust than ordinary tough rubber sheathed flexible cord (IEC 60245-1:2003, Annex A, designation 53) or ordinary polyvinyl chloride sheathed flexible cord (IEC 60227-1:1993, Annex A, design. 53. For the US/CA the requirements of the NEC and Canadian code shall be followed (US and CA national differences).

Warning! *Battery system, equipotential pin, metal wiring on equipotential pin, wheels and brake shall be replaced/send back to maintain by the manufacturer every two years, risks of function failure, electrical shock, equipment damage, environment pollution and etc. may occur if not doing so.*



15. If your computer clock is unable to keep accurate time or the BIOS configuration resets to default, please check the battery.

Caution! *Do not replace the battery yourself. Please contact a qualified technician or your retailer.*



The computer is provided with a battery-powered real-time clock circuit. There is a danger of explosion if battery is incorrectly replaced. Replace only with same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Caution! *When servicing the device, always use replacement parts that meet Advantech standards. Advantech Medical cannot warrant or endorse the safe performance of third-party replacement parts for use with our medical device.*



Caution! *Application User: This device is provided to professional nurses/caregivers and technicians. Cannot be used by people other than nurses/caregivers and technicians*



16. CLASSIFICATION:
 - Supply Medical Grade adapter (IEC-60601-1-2)
 - No applied part
 - IP65 front panel
 - Continuous Operation

Safety Information

For your own safety and that of your equipment, always take the following precautions.

Disconnect the power plug (by pulling the plug, not the cord), from your computer if any of the following conditions exists:

- The power cord or plug becomes frayed or otherwise damaged
- Your cart has been damaged
- You suspect that your computer needs service or repair
- You want to clean the cart or screen
- You want to remove/install any parts

GROUNDING

Connect the AMiS Cart to an equivalent receptacle marked "Grounding material" to ensure ground.

SERVICE AND REPLACEMENT

Do not attempt to service or replace any part of the AMiS Medical Cart unless directed to do through Advantech approved documentation (i.e., this User Manual or other instructions). Only Advantech or an Advantech certified entity may service or replace the cart components. If any component on the cart is missing or damaged, the cart must not be used. Contact Advantech immediately to request service. The non-detachable power cord is not intended to be replaced by anyone except for Advantech approved professionals, the power cord can only be the ones that matches the voltage of the power outlet, as well as been approved and complies with the safety standard of your particular country.

DO NOT OPEN THE POWER SYSTEM

Unauthorized personnel opening the power system may cause injury and/or death. If the unit is not working properly, please contact Advantech.

We are not allowing customer to swap battery pack or cells, if we find the power system be opened/disassembly by customer, Advantech will not guaranty the power system warranty from then on.

DO NOT USE THE UNIT IN OR NEAR WATER OR OTHER LIQUIDS

If the unit becomes wet, unplug it immediately, wipe away any excess liquid and allow it to dry before use.

Failure to do so can result in injury and/or death.

DO NOT MOVE THE EQUIPMENT WHEN THERE IS PEOPLE AROUND

If there are people around the equipment, in order to avoid people's hands stuck on the iron bars, do not move the equipment.

Failure to do so may cause harm to people's hands.

Warning! Maintenance for the wheels



The wheels should be checked upon monthly basis to confirm the current situation of the wheels, since if in bad condition or damaged it may cause mechanical hazard to other people, such as bumping into other people.

Accessory equipment connected to the analog and digital interfaces must be in compliance with the respective nationally harmonized IEC standards (i.e. IEC 60950 for data processing equipment, IEC 60065 for video equipment, IEC 61010-1 for laboratory equipment, and IEC 60601-1 for medical equipment.) Furthermore all configurations shall comply with the system standard IEC 60601-1-1. Anyone who connects additional equipment to the signal input part or signal output part is configuring a medical system, and is therefore, responsible that the system complies with the requirements of the system standard IEC 60601-1-1. The unit is for exclusive interconnection with IEC 60601-1 certified equipment in the patient environment and IEC 60XXX certified equipment outside of the patient environment. If in doubt, consult the technical services department or your local representative.



IEC 60878 and ISO 3864-B.3.6 : Warning: dangerous voltage.



ISO 7000-0434: **Caution**, consult ACCOMPANYING DOCUMENTS.



ISO 7000-M002:: Follow operating instructions for use.



IEC 60417 -5009: STAND-BY.



Direct Current



IEC 60417-5017 : Earth (ground)



IEC 60417-5021: (Equipotential)



ISO 7010-P018: Sitting prohibited

Additional Information and Assistance

1. Visit the Advantech website at <http://support.advantech.com> where you can find the latest information about the product.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
 - Product name and serial number
 - Description of your peripheral attachments
 - Description of your software (operating system, version, application software, etc.)
 - A complete description of the problem
 - The exact wording of any error messages
 - This equipment is a source of electromagnetic waves. Before use please make sure that there are not EMI sensitive devices in its surrounding which may otherwise malfunction

Environmental Protection

- Follow national requirements to dispose of unit.

Contents

Chapter 1	General Information	1
1.1	Introduction	2
1.2	Specifications	2
1.3	Dimensions	4
	Figure 1.1 USM-500 Dimensions	4
1.4	Overview	5
1.5	Features	6
Chapter 2	System Setup	9
2.1	Quick Start	10
2.2	Function Introduction	12
Chapter 3	USM Medical Computer and Disinfecting.....	17
3.1	USM-500 Medical Computer Cleaning and Disinfecting	18

Chapter 1

General Information

1.1 Introduction

USM-500 (Universal System for Medical) means multiple purpose applications, for medical use. USM-500 as a medical certified platform with certified medical power supply to support CPU computing and GPU computing as platform for artificial intelligent for medical applications.

USM-500 also support IP65 front cover, which is easy for customization for logo and add bottom on membrane. It can be the platform for software developer to save time to market to catch the trend of AI application for medical use.

1.2 Specifications

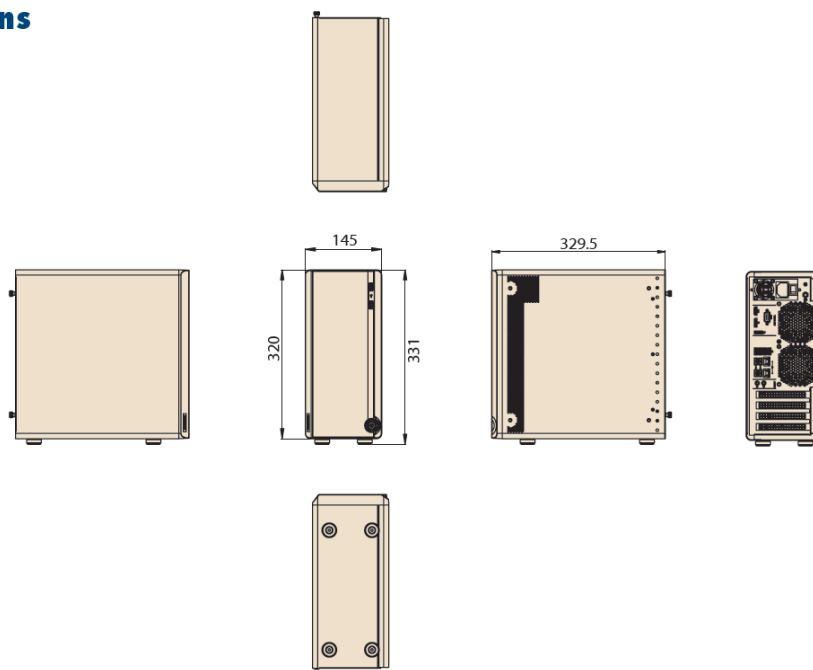
System	CPU	Intel 8 th Gen i5-8500T(35W) Support up to i7-8700(65W)	
	Chipset	Intel Q370	
	Memory	8G DDR4 SDRAM 4 U-DIMM support up to 64G DDR4 SDRAM 2400/2666 MHz	
	Operating System	Win10 IoT Enterprise/Linux CentOS	
Expansion Slot (Full Size)	PCIex1 (Gen3)	1GB/s Per direction	
	PCIex1 (Gen3)	4GB/s Per direction	
	PCIex1 (Gen3)	8GB/s Per direction	
	PCIex1 (Gen3)	16GB/s Per direction	
Physical Characters	Dimension	320x132x130mm	
	Weight	10kg (USM-500J-W5585000S)	
Environment		Operating	Non-Operating
	Temperature	0~40 °C (32~104 °F)	-40~70 °C (-40~156 °F)
	Humidity	10~95% @40 °C, non-considering	10~95% @60 °C, non-considering
	Vibration	1Grms	2Grms
	Shock	10G (with 11ms duration, half sine wave)	
I/O	HDMI	Support Max Resolution 4096x2160@ 60MHz(ESD 8Kv Criteria A)	
	eDP	Support Max Resolution 4096x2160@ 60MHz(ESD 8Kv Criteria B)	
	DVI-D	Support Max Resolution 1920x1200@ 60MHz(ESD 8Kv Criteria A)	
	Serial	RS232/422/485x1(ESD 8Kv Criteria A)	
	Ethernet	Intel I219LM and Intel I211AT	
Storage	HDD1	500GB 3.5" SATA 7200RPM 32MB	
	HDD2	N/A	

	CD Drive	SLIM 8X SATA DVD+/-RW DL
	M.2	2280(M Key) NV/Me PCIe4 and SATA M.2 support
	M.2	2230(E Key)
Accessory	OS	Win10 IoT Enterprise
Power Supply	1U	High Efficiency Power Supplier 500W (Medical Grade)
Certification	CE/FCC/CCC/IEC-60601-1-2 (4 th)	

1.3 Dimensions

ons

Unit: mm



1.4 Overview

USM-500

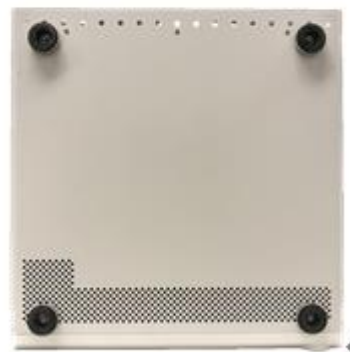


Front View

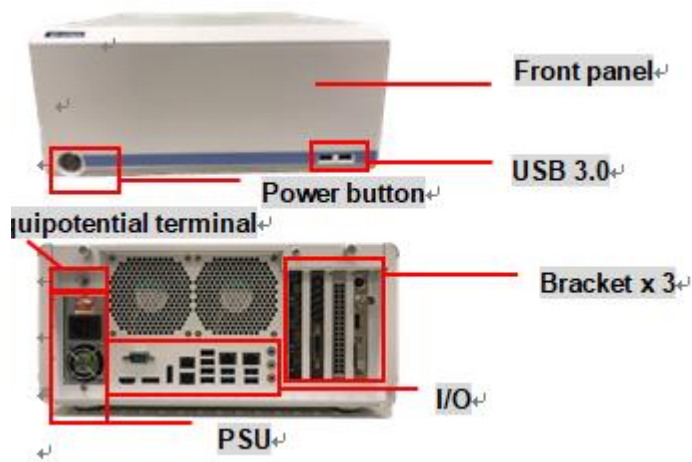
Back View



Top View

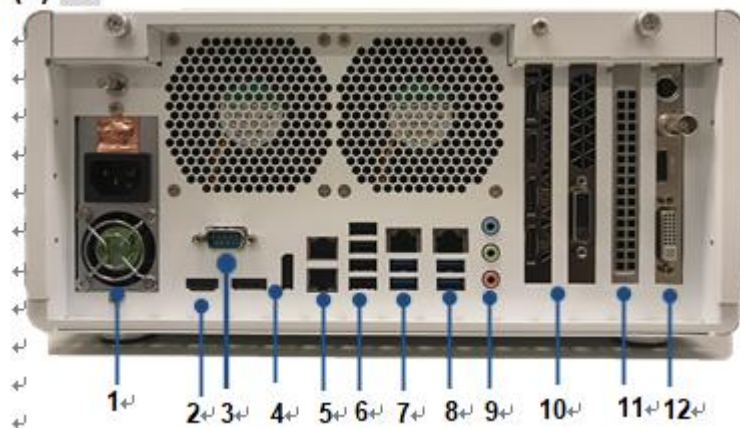


Bottom View



1.5 IO

(2) IO



- (1) PSU
- (2) HDMI
- (3) RS-232
- (4) 2 x DP
- (5) 2 x RJ-45
- (6) 4 x USB 2.0
- (7) 1 x RJ-45, 2 x USB 3.0
- (8) 1 x RJ-45, 2 x USB 3.0
- (9) AV
- (10) PCIe(x16) slot (Bracket 1, 2)
- (11) PCIe(x4) slot (Bracket 3)
- (12) PCIe(x8) slot (Bracket 4)

Chapter 2

System Setup

2 Quick Start

Power On:

Make sure that the “Equipotential Terminal” is connected to the hospital’s equipotential ground.

Connect the adapter to the “DC Input Jack”. Please note that using a non-genuine adapter may pose a potential risk to the system.

Press “Power On/Off”. The button will turn green.

Chapter 3

USM-500

**Cleaning and
Disinfecting**

3.1 USM-500 Cleaning and Disinfecting

During normal use of the USM-500, the device may become dirty and should be regularly cleaned.

Steps:

1. Prepare cleaning fluid as below list.
2. Wipe the USM-500 with a clean cloth that has been moistened in the cleaning solution.
3. Wipe thoroughly with a clean cloth.

No	Cleaning Agents
1	AHP Accel TB
2	75% Alcohol
3	Glutaraldehyde [C ₅ H ₈ O ₂], 2% concentration
4	Isopropyl alcohol [(CH ₃) ₂ CHOH], 70% concentration
5	Sodium hypochlorite [NaOCl], 10% concentration
6	CHLOR-CLEAN (1.7g NaDCC)(1000 ppm available chlorine)

Caution!



- *Do not immerse or rinse the AMIS or its peripherals. If you accidentally spill liquid on the device, disconnect the unit from the power source. Contact your Biomed Department regarding the continued safety of the unit before placing it back in operation-Do not spray cleaning agent on the chassis.*
- *Do not use disinfectants that contain phenol.*
- *Do not autoclave or clean the AMIS or its peripherals with strong aromatic, chlorinated, ketone, ether, or ether solvents, sharp tools or abrasives. Never immerse electrical connectors in water or other liquids.*

ADVANTECH

Enabling an Intelligent Planet

www.advantech.com

Please verify specifications before quoting. This guide is intended for reference purposes only.

All product specifications are subject to change without notice.

No part of this publication may be reproduced in any form or by any means, electronic, photocopying, recording or otherwise, without prior written permission of the publisher.

All brand and product names are trademarks or registered trademarks of their respective companies.

© Advantech Co., Ltd. 2019