

User Manual

HIT-W121

Healthcare Infotainment Terminal

Trusted ePlatform Services

ADVANTECH

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Product Warranty (2 years)

Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandise authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Declaration of Conformity

FCC Class B

Note: 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.

Warning! *Any changes or modifications made to the equipment which are not expressly approved by the relevant standards authority could void your authority to operate the equipment.*



Caution! *Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.*



Technical Support and Assistance

1. Visit the Advantech web site at www.advantech.com/support 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

Safety Instructions

1. Read these safety instructions carefully.
2. Keep this User Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. **DO NOT COVER THE OPENINGS.**
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If one of the following situations arises, get the equipment checked by service personnel:
 - a. The power cord or plug is damaged.
 - b. Liquid has penetrated the equipment.
 - c. The equipment has been exposed to moisture.
 - d. The equipment does not work well, or you cannot get it to work according to the user's manual.
 - e. The equipment has been dropped and damaged.
 - f. The equipment has obvious signs of breakage.
15. **DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -20° C (-4° F) OR ABOVE 60° C (140° F). THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.**
16. If your computer clock loses a significant amount of time or the BIOS configuration resets to default, the battery has no power.

Caution! 1. *Do not replace power adaptor yourself. Please contact a qualified technician or your retail.*



2. *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 manufacture. Discard used batteries according to the manufacturer's instructions*
3. *Cleaning: During normal use of the HIT-W151 may become soiled and should, therefore, be cleaned regularly. Agents: Alcohol or water.*
4. *End of Product: for Environmental protection, please follow national requirements to dispose of unit.*

17. CLASSIFICATION:
 - Supplied by Class I adapter
 - No applied parts
 - Continuous operation
 - No AP or APG category
18. Follow national requirements to dispose of unit.
19. Maintenance: To properly maintain and clean the surfaces, use only approved products or clean with a dry cloth.
20. Contact information:
No.1, Alley 20, Lane 26, Rueiguang Road Neihu District, Taipei, Taiwan 114, R.O.C
TEL: (02) 2792-7818
- 21.



Medical Equipment
With Respect to Electric Shock,
Fire, and Mechanical Hazards Only,
In Accordance with UL 60601-1,
CAN/CSA C22.2 No. 601.1

22. This equipment is not to be used as a life support system.
23. 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 must 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.
24. A user must not allow SIP/SOPs and the patient to come into contact with one another at the same time.
25. The sound pressure level at the operator's position according to IEC 704-1:1982 is no more than 70dB (A).

DISCLAIMER: This set of instructions is given according to IEC 704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

Note! *Attention, please thoroughly consult the accompanying documentation.*



Caution! *This product: HIT-W121 is only used with the qualified & certificated power adapter listed below:*



Medical: SINPRO ELECTRONICS CO LTD, model: MPU50-107, Output: 16-21Vdc, 50W max (SET UP19Vdc, 2.63A).

ITE: FSP GROUP INC, model: FSP065-RAB, Output: 19Vdc, 3.42A.

ITE: FSP GROUP INC, model: FSP040-RAB, Output: 19Vdc, 2.1A.

Note! ISO 7010-M002 : Refer to instruction manual/booklet



IEC 60878 : Follow operating instructions or Consult instructions for use.

Environmental protection

Follow national requirements to dispose of unit.

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Chapter 1

Introduction

This chapter briefly introduces the HIT-W121 product.

Sections include:

- Overview
- System Configuration

1.1 Overview

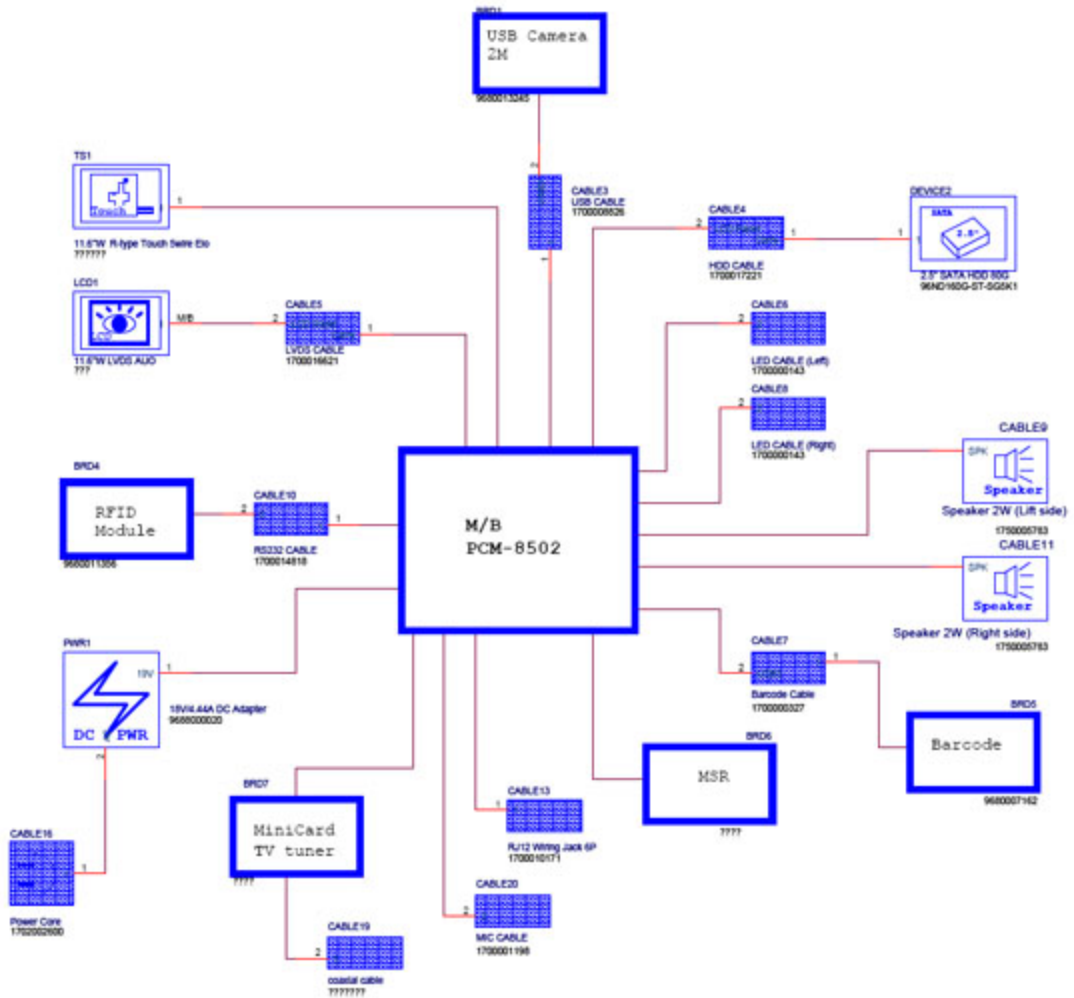
The HIT-W121 Healthcare Infotainment Terminal is Advantech's standard product with a built-in Windows XP Embedded OS. In addition to providing hospital bedside patient information, remote monitoring, and care functions, the CPU and the LAN-enabled architecture of the HIT-W121 terminal also serves as an integrated hospital gateway device. The HIT-W121 equipped with an Intel Atom 1.6GHz Dual-core processor, 11.6" W Full-Flat touch screen, onboard isolated Giga-LAN port and COM port, plus with other common IO such like USB and Line-in & MIC..etc. which plays a key role as a hospital bedside care and monitoring solution. It connects the service calls and LED light signals of a hospital room through the LAN to the hospital.



1.2 System Configuration

The block diagram of a HIT-W121 Healthcare Infotainment Terminal based on Hospital bedside environment is shown in the following diagram:

HIT-W121 SYSTEM DIAGRAM



Chapter 2

Hardware Description

This Chapter describes the hardware features of the HIT-W121.

Sections include:

- General Specifications
- Mechanical Specifications
- External View

2.1 General Specifications

Hardware	CPU	Intel Atom (N450/D510) 1.6 GHz Processor
	Front Side Bus	Supports FSB 667 MHz
	System Chipset	Intel N450/D510 + ICH8M
	Memory	up to 2 GB
	Storage	CF or SATA HDD interface
	Camera	2 megapixel CCD Module (Optional)
	Bus Expansion	Mini PCIe x 2
Display	Size	11.6" W TFT
	Max Resolution	1366 x 768
	Luminance	200 cd/m ²
	Contrast Ratio	400:1
Touchscreen	Type	Analog Resistive
	Light Transmission	80%
	Durability	30 million
I/O Ports	USB Port	3 (side x 2, rear x 1)
	Smart Card Reader	1 (Removeable with Insert sealed by plastic changecord)
	Line out	1
	Microphone in	1
	COM Port (Isolated)	1
Audio	Speaker	2 watt x 2
	Microphone	1
Network	LAN	10/100/1000 RJ-45 x 1
	WLAN	802.11 b/g/n
Emergency Alarm	Hotkey	5 programmable touch buttons with 2 types of artwork
	LED Light Indicator	1
Bus Expansion	mini-PCI Slot	2 (1 for WLAN, 1 for tuner)
Software	Operating System	Support WES, WES7, Win7 / Linux: Fedora 13, Ubuntu, Android
Mechanical	Mounting	VESA 75 x 75 mm
	Dimensions (W x H x D)	302.5 x 220.25 x 43 mm
	Weight	3.3 kg
Options	TV Tuner	Yes, Optional
	Handset	Yes, Optional
	Barcode Scanner	Yes, Optional. 2D type
	Table Stand	Yes, Optional
	RFID	Yes, Optional
Power Supply	AC/DC Adapter	
	Input Voltage	100 ~ 240 VAC, 1.1 ~ 0.45 A @ 47~ 63 Hz
	Output Voltage	IT: 19 VDC, 3.95 A MAX; Medical: 16 ~ 21 VDC (SET UP 19V), 2.63 A MAX

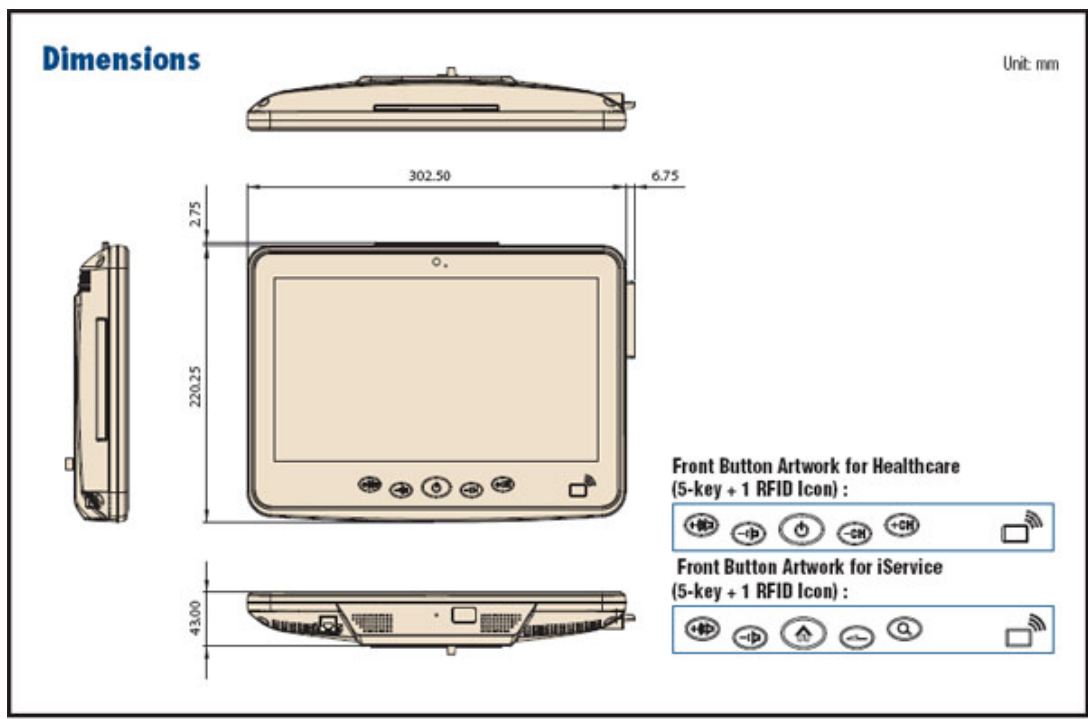
Environment	Operating Temperature	0 ~ 40°, C
	IP Rating	Front Panel; IP54 ; IPX1 All around
	Vibration	1 G
	Shock	50 G
	Certifications	CE, FCC, CCC, CB, ITE UL, EN 60950 & EN 60601-1 approved

Operating Humidity: 20% to 90% (No Condensation)
 Operating Atmospheric Pressure: 700 to 1060 hPa
 Storage Humidity: 10% to 95% (No Condensation)
 Storage Atmospheric Pressure: 700 to 1060 hPa
 Transportation Temperature: -20°É to 60°É
 Transportation Humidity: 10% to 95% (No Condensation)
 Transportation Atmospheric Pressure: 700 to 1060 hPa

2.2 Mechanical Specifications

2.2.1 Mechanical Specifications (Terminal)

System Dimensions: 302.5 (W) x 220.25 (H) x 43.00 (D) mm

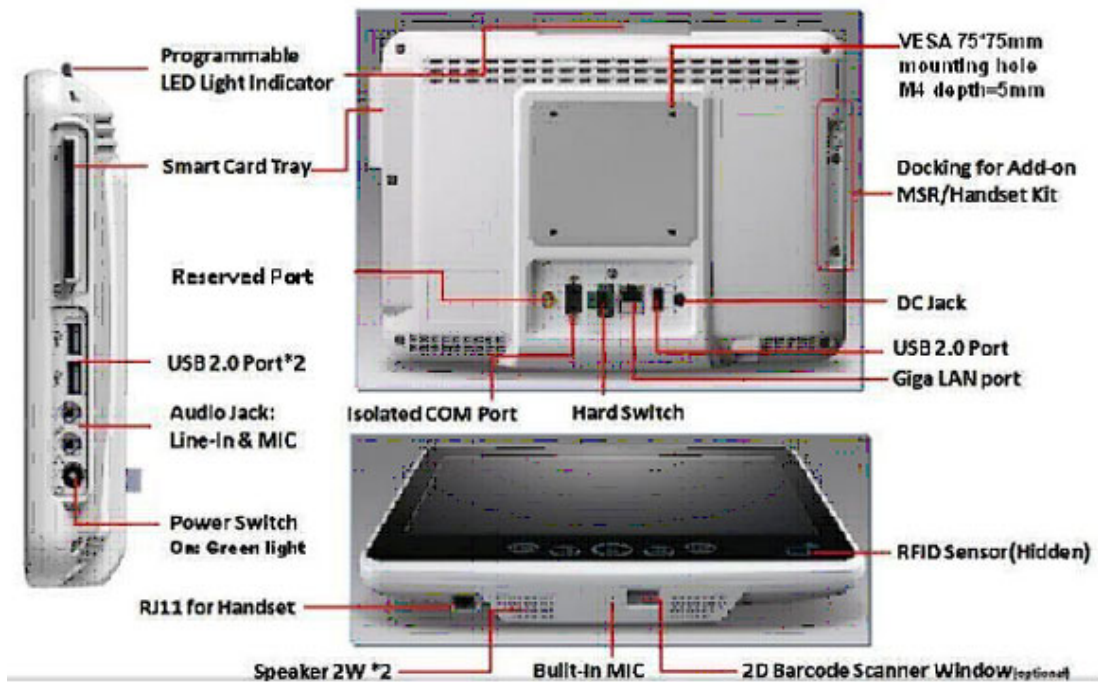


Carton Dimensions: 500 (W) x 385 (H) x 160
Mounting System: VESA 75*75mm standard mounting hole
Net Weight: 3 kg
VESA Mount: 75*75 mm or 100*100 mm
SCREWS: M4*10 mm

Caution! Use suitable mounting apparatus to avoid risk of injury.



2.2.2 Mechanical Drawing for Rear I/O



2.3 External View

2.3.1 Front View

Front View (Terminal)



2.3.2 Side & Bottom View



2.3.3 Rear View

Rear View (Terminal)



Chapter 3

Software Description

This Chapter describes the software features of the HIT-W121.

Sections include:

- Windows XP Embedded
- Software Specifications

3.1 Windows XP Embedded Software Specifications

Real-Time OS Kernel

- Windows Embedded Standard 2009/ 7 Entry MUI Language Version

Driver List

- Chipset Intel ICH8M
- Graphics Intel GMA
- Audio Realtek Audio ALC892
- LAN Realtek Ethernet Controller RTL8111D-GR
- Camera D-Max Webcam for HAA-070201-00A
- Smartcard Reader EzUSB SmartCard Reader
- Touch AMT Penmount Touch Controller Universal Driver
- WLAN Azure Wave 802.11b/g/n AW-NE768

Embedded Application Software

Advantech SUSI

SUSI Demo Program

1. LED Indicator Control.

Chapter 4

Design Requirements

This Chapter describes the design requirements of the HIT-W121.

Sections include

- Environmental Specifications
- Reliability

4.1 Environmental Specifications

Temperature & Humidity

- Operating Temperature: 0 ~ 40° C
- Storage Temperature: 0 ~ 60° C
- Relative Humidity: 0 ~ 95% RH (Non-condensed)

Case / Panel Temperature

- Less than 40° C @ 25° C ambient temperature (front bezel)

Safety

- CB, TUV, UL ITE & Medical, EN-60950 & 60601-1, CCC

EMI

- CE, FCC class B approved, BSMI.

Vibration:

- 10 ~ 18 Hz, 1.5 mm peak-to-peak displacement
- 18 ~ 500 Hz, 1 G acceleration

4.2 Reliability

System MTBF

50,000 hours above*

Touchscreen

- 10 million touch actuation times.

Power Requirements

- DC Input Voltage: 19 V
- Power Consumption: less than 60 W

*: with specific BOM listed

Appendix **A**

Annex

A.1 Annex

Guidance and manufacturer's declaration – electromagnetic emissions		
The model HIT-W121 is intended for use in the electromagnetic environment specified below. The customer or the user of the model HIT-W121 should assure that it is used in such an environment.		
Emissions test	Compliance	Electromagnetic environment – guidance
RF emissions CISPR 11	Group 1	The model HIT-W121 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 CISPR 11	Class B	The model HIT-W121 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 IEC 61000-3-2	Class A	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Not applicable	

Recommended separation distances between portable and mobile RF communications equipment and the model HIT-W121			
The model HIT-W121 is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the model HIT-W121 can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the model HIT-W121 as recommended below, according to the maximum output power of the communications equipment.			
Rated maximum output power of transmitter W	Separation distance according to frequency of transmitter m		
	150 kHz to 80 MHz $d = 1,2 \sqrt{P}$	80 MHz to 800 MHz $d = 1,2 \sqrt{P}$	800 MHz to 2,5 GHz $d = 2,3 \sqrt{P}$
0,01	0,12	0,12	0,23
0,1	0,38	0,38	0,73
1	1,2	1,2	2,3
10	3,8	3,8	7,3
100	12	12	23

For transmitters rated at a maximum output power not listed above, the recommended separation distance d in metres (m) can be estimated using the equation applicable to the frequency of the transmitter, where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.


NOTE 1 At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

Guidance and manufacturer's declaration – electromagnetic immunity			
The model HIT-W121 is intended for use in the electromagnetic environment specified below. The customer or the user of the model HIT-W121 should assure that it is used in such an environment.			
Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment –guidance
Electrostatic discharge (ESD) IEC 61000-4-2	±6 kV contact ±8 kV air	±6 kV contact ±8 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 IEC 61000-4-4	±2 kV for power supply lines ±1 kV for input/output lines	±2 kV for power supply lines ±1 kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1 kV line(s) to line(s) ±2 kV line(s) to earth	±1 kV line(s) to line(s) ±2 kV line(s) to earth	Mains power quality should be that of a typical commercial or hospital environment.
interruptions and voltage variations on power supply input lines IEC 61000-4-11	<5 % UT (>95 % dip in UT) for 0,5 cycle 40 % UT (60 % dip in UT) for 5 cycles 70 % UT (30 % dip in UT) for 25 cycles <5 % UT (>95 % dip in UT) for 5 sec	<5 % UT (>95 % dip in UT) for 0,5 cycle 40 % UT (60 % dip in UT) for 5 cycles 70 % UT (30 % dip in UT) for 25 cycles <5 % UT (>95 % dip in UT) for 5 sec	Mains power quality should be that of a typical commercial or hospital environment. If the user of the model HIT-W121 requires continued operation during power mains interruptions, it is recommended that the model HIT-W121 be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
NOTE UT is the a.c. mains voltage prior to application of the test level.			

Guidance and manufacturer’s declaration – electromagnetic immunity

The model HIT-W121 is intended for use in the electromagnetic environment specified below. The customer or the user of the model HIT-W121 should assure that it is used in such an environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment – guidance
<p>Conducted RF IEC 61000-4-6</p> <p>Radiated RF IEC 61000-4-3</p>	<p>3 Vrms 150 kHz to 80 MHz</p> <p>3 V/m 80 MHz to 2,5 GHz</p>	<p>Vrms</p> <p>V/m</p>	<p>Portable and mobile RF communications equipment should be used no closer to any part of the model HIT-W121, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.</p> <p>Recommended separation distance</p> $d = 1,2 \sqrt{P}$ <p>$d = 1,2 \sqrt{P}$ 80 MHz to 800 MHz</p> <p>$d = 2,3 \sqrt{P}$ 800 MHz to 2,5 GHz</p> <p>where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in metres (m).</p> <p>Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, ^a should be less than the compliance level in each frequency range. ^b</p> <p>Interference may occur in the vicinity of equipment marked with the following symbol:</p> 

NOTE 1 At 80 MHz and 800 MHz, the higher frequency range applies.
 NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

- a** Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the model HIT-W121 is used exceeds the applicable RF compliance level above, the model HIT-W121 should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the model HIT-W121.
- b** Over the frequency range 150 kHz to 80 MHz, field strengths should be less than V/m .

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