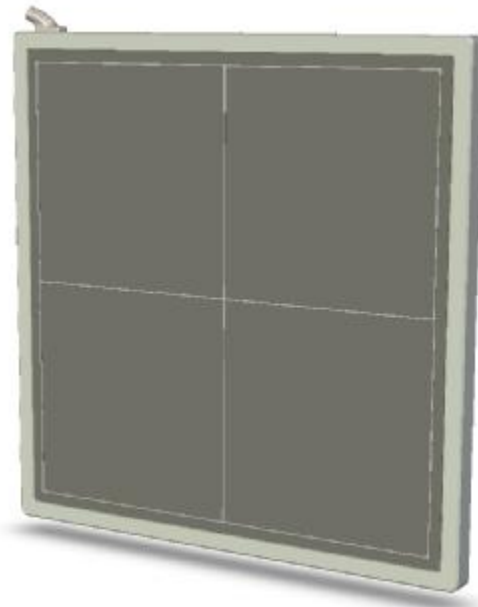


iRay

Venu1717

FPD Medical X-ray Radiography Flat Panel Detector

User's Manual



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DATE: 2012-09

Version: V1.1

iRay Tech.

To customers



Thank you for purchasing iRay's FPD Medical X-ray Radiography Flat Panel Detector (hereafter refers to as Venu1717) . This User's Manual explains the general usage of the detector and peripheral equipment. Before using this product, please read this manual thoroughly. Any abnormalities or malfunction or body harms caused by violations of the user's manual will not be responsible by our company, nor any warranties will be made by iRay.

Important information on usage and management of equipment

1. Only a physician or a legally certified operator is allowed to use this product.
2. The equipment should be maintained in a safe and operable condition by maintenance personnel.
3. Use only computers and image display monitors complying with IEC 60601-1 or IEC 60950-1, and under a system configuration comply with IEC 60601-1-1. For details, consult our sales representative or local iRay dealer.
4. User only the dedicated cables. Do not use any cables other than those supplied with this product.
5. Opening the detector by the unauthorized personnel of our company is forbidden.
6. Prevent the liquid or electrical conductive substance entering into the detector.
7. The detector should not be used in the circumstance with flammable gas or corrosive gas.
8. The detector with radiation protection in accordance with IEC 60601-1-3.

Disclaimer

1. In no event shall iRay be liable for any damage or loss arising from fire, earthquake, any action or accident by a third party, any intentional or negligent action by user, any trial usage, or other usage under abnormal conditions.
2. Roentgenography, image processing , image reading, and image data storage must be performed in accordance with the laws of the country or region in which the product is being used. The user is responsible for maintaining the privacy of image data.
3. In no event shall iRay be liable for personal physical harm or property damage that is sustained when the instructions are not followed or the product is misused.

4. It is the responsibility of the attending physicians to provide medical care services. iRay will not be liable for faulty diagnoses.
5. In no event shall iRay be liable for direct or indirect consequential damages arising from the use or unavailability of this product. iRay shall not be liable for loss of image for any reason.
6. In no event shall iRay be liable for any damage arising from moving, alteration, inspection or repair by a person other than authorized service engineers.
7. Specifications, composition, and appearance of this product may change without prior notice.

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About CE

Venu1717 is according to the standard of IEC 60601-1-1-2, Electromagnetic Compatibility –Medical Electrical Instrument.

The detector can connect to public mains as defined in CISPR 11 (the class defines GROUP 1 Class B).

According to CE testing, the test standards see the chapter V: Regulatory information.

If you want to know more information, please connect to the product or iRay's authorized agent.

Note on installation

Y Request your sales representative or local iRay dealer to install this product.

Note on disposal of this product

Y Disposal of this product in an unlawful manner may have a negative impact on health and on the environment. When disposing of this product, therefore, be absolutely sure to follow the procedure which is in conformity with the laws and regulations applicable in your area.



European Union (and EEA) only.

This symbol indicates that this product is not be disposed of with your household waste, according to the WEEE Directive (2002/96/EC) and your national law. This product should be handed over to a designated collection point, e.g., on an authorized one-for-one basis when you buy a new similar product or to an authorized collection site for recycling waste electrical and electronic equipment (EEE). Improper handling of this type of waste could have a possible negative impact on the environment and human health due to potentially hazardous substances that are generally associated with EEE. At the same time, your cooperation in the correct disposal of this product will contribute to the effective usage of natural resources. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, waste authority, approved WEEE scheme or your household waste disposal service.

For more information regarding return and recycling of WEEE products, please visit www.iray-tech.com.

About Service Information

-
- ÿ Refer instrument servicing to iRay or iRay’s authorized service personnel only.
 - ÿ iRay or iRay’s authorized agents provide telephone service and other communication services. Local services are decided by fact.
 - ÿ Some services need pay for service expense except components expense.
 - ÿ Any unauthorized attempt to repair instrument under warranty voids that warranty.
 - ÿ Client must offer product’s serial number.
 - ÿ Under warranty, some damages don’t need take any service expense and components expense because of unartificial factors.
 - ÿ Under warranty, some damages only need take components expense and need not take any service expense because of artificialness.
 - ÿ Outside warranty, some damages need take service expense and components expense because of artificialness.
 - ÿ Boards and components that come from repair belong to manufacturer all and singular.
 - ÿ During the way which be sent to iRay or iRay’s authorized agent for examination or repair, the customers should take the responsibility if the instruments damage because of transportation or unartificial factors.

Symbols

The list of the symbols used in this instrument is as follows:



Symbol for “caution, consult accompanying documents”.



CE mark, when a device has been past CE test, we must put the CE mark on the device. And the CE number can be after the symbol.

a. This symbol shall be accompanied by the manufacturer’s serial number.



The serial number shall be after or below the symbol, adjacent to it.

b. The relative size of the symbol and the serial number are not specified.

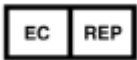
c. So far our product serial number is made of seven digits, two digits for the year and two digits for the month and three digits for sequence number.

So the serial number could be show the date of made.



a. The symbol shall be accompanied by the name and the address of the manufacturer, adjacent to the symbol. The address is not required with the symbol on an immediate container as specified in EN375 AND EN376, except when the immediate container is also the outer container.

b. The relative size of the symbol and the name and address is not specified.



a. The symbol shall be accompanied by the name and the address of the authorized representative in the European Community, adjacent to the symbol. The address is not required with the symbol on an immediate container as specified in EN375 AND EN376, except when the immediate container is also the outer container.

b. The relative size of the symbol and the name and address is not specified.



Symbol for “consult instructions for use”, “consult operating instructions”.



Equipotentiality, to identify the terminals which, when connected together, bring the various parts of an equipment or of a system to the same potential. Not necessarily being the earth (ground) potential. e.g. for local bonding.



Type B applied part , applied part complying with the specified requirements of EN IEC60601-1 to provide protection against electric shock, particularly regarding allowable patient leakage current and patient auxiliary current.



“ON” (power)



“OFF” (power)



Protective Earth Conductor (ground)

Trademarks

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Contents

CONTENTS	7
SAFETY NOTICES	9
1. CHAPTER I SAFETY INFORMATION.....	10
1.1 SAFETY PRECAUTIONS	10
1.2 NOTES FOR USING THE EQUIPMENT	15
BEFORE EXPOSURE	15
DURING EXPOSURE	15
CLEANING	15
2. CHAPTER II GENERAL DESCRIPTION.....	16
2.1 SCOPE	16
2.2 MODEL	17
2.3 CHARACTERISTIC.....	18
2.4 INTENDED USE	18
2.5 STANDARD CONFIGURATION	18
2.6 MAIN SPECIFICATIONS	19
2.7 CLASSIFICATION OF THE EQUIPMENT	21
3.CHAPTER III INSTALLATION AND OPERATION	22
3.1 QUICK START	22
3.2 FIRST IMAGE ACQUISITION	22
3.3 FPD CONFIG	24
3.4 GAIN CORRECTION	25
3.5 DEFECT CALIBRATION.....	27
3.6 ACQUIRE CALIBRATED IMAGE	27
4. CHAPTER IV CONTROL INTERFACE.....	28
4.1 AC INPUT	28
4.2 SERIAL PORT	28
4.3 GIGABIT ETHERNET PORT	29
4.4 HVG INTERFACE.....	29
4.5 T-AEC MODULE	30
4.6 X-RAY IMAGE ACQUISITION	30
4.7 EVENT	36
5.CHAPTER V REGULATORY INFORMATION	38
5.1 MEDICAL EQUIPMENT SAFETY STANDARDS.....	38
5.2 GUIDANCE AND MANUFACTURE’S DECLARATION FOR EMC.....	39
6.CHAPTER VI IMAGING SOFTWARE SDK.....	44

6.1 DESCRIPTION OF LIBRARY (IRAYACQUIRELIB.LIB)	44
6.2 DESCRIPTION OF FUNCTION:	49
6.3 DEMO ILLUSTRATION	70
7.CHAPTER VII SERVICE INFORMATION	72
PRODUCT LIFETIME	72
REGULAR INSPECTION AND MAINTENANCE	72
REPAIR	72
REPLACEMENT PARTS SUPPORT	72
APPENDIX A INSTALLATION OF SDK.....	73
APPENDIX B INFORMATION OF MANUFACTURES.....	76

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Safety notices

The following safety notices are used to emphasize certain safety instructions. This manual uses the caution symbol along with a caution message.



This notice is used to identify conditions under which improper use of the product may cause death or serious personal injury.



This notice is used to identify conditions under which improper use of the product may cause minor personal injury.



This notice is used to identify conditions under which improper use of the product may cause property damage.



This is used to indicate a prohibited operation.



This is used to indicate an action that must be performed.



This is used to indicate important operations and restrictions. Be sure to read this notice to prevent property damage or malfunction.





This is used to indicate operations for reference and complementary information. Users are recommended to read this notice.

1. Chapter I Safety Information

1.1 Safety precautions

Follow these safeguards and properly use the equipment to prevent injury and damage to any equipment/data.

WARNING	
Installation and environment of use	
 Prohibited	<p>⚡ Do not use or store the equipment near flammable chemicals such as alcohol, thinner, benzene, etc.</p> <p>If chemicals are spilled or evaporate, it may result in fire or electric shock through contact with electric parts inside the equipment. Also, some disinfectants are flammable. Be sure to take care when using them.</p> <p>⚡ Do not connect the equipment with anything other than specified.</p> <p>Doing so may result in fire or electric shock.</p>
Power supply	
 Prohibited	<p>⚡ Do not operate the equipment using any type of power supply other than the one indicated on the rating label.</p> <p>Otherwise, it may result in fire or electric shock.</p> <p>⚡ Do not handle the equipment with wet hands.</p> <p>You may experience an electric shock that could result in death or serious injury.</p> <p>⚡ Do not place heavy object such as medical equipment on cables and cords, or do not pull, bend, bundle, or step on them to prevent their sheath from being damaged, and do not alter them neither.</p> <p>Doing so may damage the cords which could result in fire or electric shock.</p> <p>⚡ Do not supply power to more than one piece of equipment using the same AC outlet.</p> <p>Doing so may result in fire or electric shock.</p> <p>⚡ Do not turn ON the system power when condensation has formed on the equipment.</p> <p>Doing so may result in fire or electric shock.</p> <p>⚡ Do not connect a multiple portable socket-outlet or extension cord to the system.</p> <p>Doing so may result in fire or electric shock.</p> <p>⚡ To avoid the risk of electric shock, this equipment must only be connected to a supply mains with protective earth.</p> <p>Not doing so may result in fire or electric shock.</p>

ÿ **Securely plug the power cord into the AC outlet.**



If contact failure occurs, or if metal objects come into contact with the exposed metal prongs of the plug, fire or electric shock may result.

ÿ **Be sure to turn OFF the power to each piece of equipment before connecting or disconnecting the cords.**

Otherwise, you may get an electric shock that could result in death or serious injury.

ÿ **Be sure to hold the plug or connector to disconnect the cord.**

If you pull the cord, the core wire may be damaged, resulting in fire or electric shock.



If the detector is intended to assemble mobile DR system, the integrated power and data cable must be ordered not longer than 2m, and the cable must be collected in the fixed position, not do this it may cause the DR system be toppled.

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WARNING

Handling



- **Never disassemble or modify the equipment.**

Doing so may result in fire or electric shock. Also, since the equipment incorporates parts that may cause electric shock as well as other hazardous parts, touching them may cause death or serious injury.

- **Do not place anything on top of the equipment.**

The object may fall and cause an injury. Also, if metal objects such as needles or clips fall into the equipment, or if liquid is spilled, it may result in fire or electric shock.

- **Do not hit or drop the equipment .**

The equipment may be damaged if it receives a strong jolt, which may result in fire or electric shock if the equipment is used without being repaired.

- **Have the patient take a fixed posture and do not let the patient touch parts unnecessarily.**



If the patient touches connectors or switches, it may result in electric shock or malfunction of the equipment.

When a problem occurs



- **Should any of the following occur, immediately turn OFF the power to each piece of equipment, unplug the power cord from the AC outlet, and contact your sales representative or local iRay dealer:**

- When there is smoke, an odd smell or abnormal sound

- When liquid has been spilled into the equipment or a metal object has entered through an opening

- When the equipment has been dropped and is damaged

Maintenance and inspection



- **When the equipment is going to be cleaned, be sure to turn OFF the power each equipment, and unplug the power cord from the AC outlet. Never use alcohol, benzene, thinner or any other flammable cleaning agent.**

Otherwise, it may result in fire or electric shock.



- **Clean the plug of the power cord periodically by unplugging it from the AC outlet and removing dust or dirt from the plug, its periphery and AC outlet with a dry cloth.**

If the cord is kept plugged in for a long time in a dusty, humid or sooty place, dust around the plug will attract moisture, and this could cause insulation failure that could result in a fire.

- **For safety reasons, be sure to turn OFF the power to each piece of equipment when the inspections indicated in this manual are going to be performed.**

Otherwise, electric shocks may occur.

CAUTION

Installation and environment of use

- ÿ **Do not install the equipment in any of the locations listed below. Doing so may result in failure or malfunction, equipment falling, or fire or injury.**



- ÿ Close to facilities where water is used
- ÿ Where it will be exposed to direct sunlight
- ÿ Close to the air outlet of an air-conditioner or ventilation equipment
- ÿ Close to heat source such as a heater
- ÿ Where the power supply is unstable
- ÿ In a dusty environment
- ÿ In a saline or sulfurous environment
- ÿ Where temperature or humidity is high
- ÿ Where there is freezing or condensation
- ÿ In areas prone to vibration
- ÿ On an incline or in an unstable area

- ÿ **Because the equipment cable is long, take care that cables do not become tangled during use. Also, be careful not to get your feet caught in the cable.**

Otherwise, it may cause a malfunction of the equipment or the injury of the user due to tripping over the cable.

- ÿ **Non-medical equipment such as the battery charger, access point and IR data communication unit cannot be used in patient's vicinity.**



Power supply

- ÿ **Always connect the three-core power cord plug to a grounded AC power outlet.**
- ÿ **To make it easy to disconnect the plug at any time, avoid putting any obstacles near the outlet, Otherwise, it may not be possible to disconnect the plug in an emergency.**
- ÿ **Be sure to ground the equipment to an indoor grounded connector. Also, be sure to connect all the grounds for the system to a common ground.**
- ÿ **Do not use any power source other than the one provided with this equipment.**
Otherwise, fire or electric shock may be cause due to leakage.

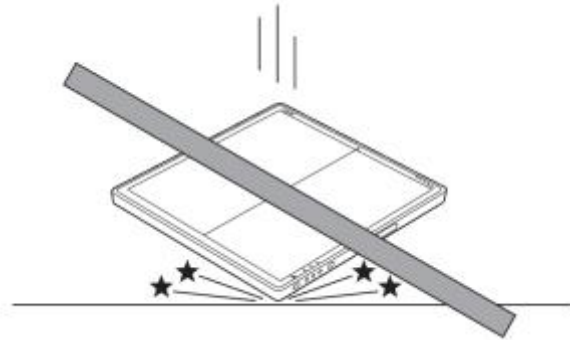
Handling

- ÿ **Do not spill liquid or chemicals onto the equipment or, in cases where the patient is injured, allow it to come in contact with blood or other body fluids.**
Doing so may result in fire or electric shock.
In such a situation, protect the equipment with a disposable covering as necessary.
- ÿ **Turn OFF the power to each piece of equipment for safety when not being used.**

CAUTION

Handling

- Handle the equipment carefully.
- Do not submerge the equipment in water.
- ! • The internal image sensor may be damaged if something hits against it, or if it is dropped.

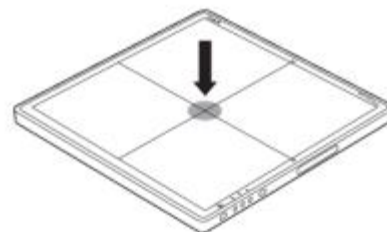


- Do not place excessive weight on the detector. Otherwise, the internal image sensor may be damaged.

<Load Limit>

Uniform load: 100kg over the whole area of the detector surface

Local load: 50kg on an area 40 mm diameter



- Be sure to use the detector on a flat surface so it will not bend. Otherwise, the internal image sensor may be damaged. Be sure to securely hold the detector while using it in upright positions. Otherwise, the detector may fall over, resulting in injury to the user or patient, or may flip over, resulting in damage to the inner device.

1.2 Notes for using the equipment

When using the equipment, take the following precautions. Otherwise, problems may occur and the equipment may not function correctly.

Before exposure

- Be sure to check the equipment daily and confirm that it works properly.
- Sudden heating of the room in cold areas will cause condensation to form on the equipment. In this case, wait until the condensation evaporates before performing an exposure. If the equipment is used while condensation is formed on it, problems may occur in the quality of captured images.

When an air-conditioner is used, be sure to raise/lower the temperature gradually so that a difference in temperature in the room and in the equipment does not occur, to prevent condensation.

During exposure

- Do not move the power, Cameralink, Ethernet or serial cables during exposure. Doing so may causing image noise or artifacts, even error image.

Cleaning

- Do not spray the detector directly with disinfectants or detergents.
- Wipe it with a cloth slightly damped with a neutral detergent. Do not use solvents such as alcohol, thinner or benzene. Doing so may damage the surface of the equipment.

2. Chapter II General Description

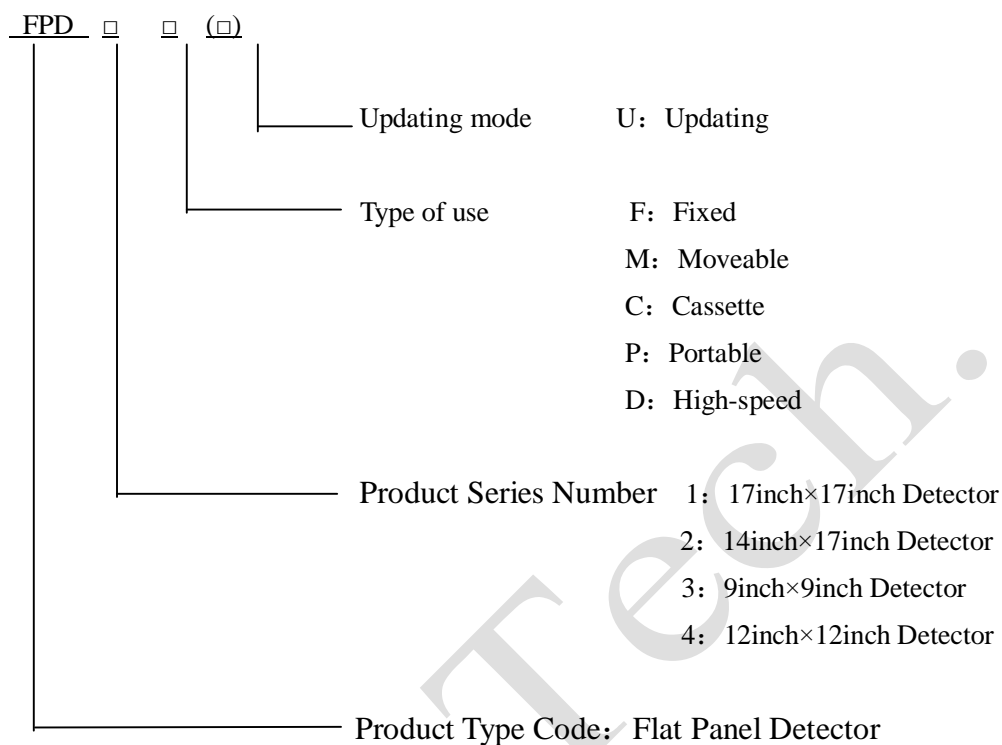
Venu1717[®] is an advanced digital radiographic flat panel detector based on amorphous silicon thin-film transistor technologies. Venu1717 is a member of iRay's Venu detector family for static x-ray imaging. Venu1717 is designed to provide the highest quality of radiographic image. Venu1717 contains an active matrix of 3072×3072 pixels with 139µm pitch. Users can select GOS(Gadolinium Sulfoxylate) or CsI (Caesium Iodide) as the scintillation screen. Cameralink and Gigabit Ethernet interfaces are both available for data transfer from the detector to a computer. In addition, Venu1717 is equipped with iRay's unique sync-shot, AEC and binning functions to meet users' various needs.

Along with the detector, iRay also provides a Microsoft Visual Studio (2008) library **IrayAcquireLib.lib**, and a demo program iDemo[®] and its source code to assist users' integration of the detector into their existing DR system. The library **IrayAcquireLib.lib** contains functions for image acquisition and detector configuration. iDemo demonstrates the usage of **IrayAcquireLib.lib** and provides a simple user interface to acquire and preview x-ray images.

2.1 Scope

This manual contains information about the iRay Venu1717 detector. All operators must read and understand this manual before using the detector. All information in this manual, including the illustrations, is based on detector model. If your detector configuration lacks any of these options, then some information in this manual does not apply.

2.2 Model



Specification of FPD serial Flat Panel Detector:

No.	Model	Brand Name	Type of Use	useful area (cm ²)	Pixel matrix	Pixel Pitch (μm)
1	FPD1F	Venu1717F	Fixed	42.7×42.7	3072×3072	139
2	FPD1M	Venu1717M	Moveable			
3	FPD1MU	Venu1717MU	Moveable updating			
4	FPD1C	Venu1717C	Cassette			
5	FPD1CU	Venu1717CU	Cassette updating			
6	FPD1D	Venu1717D	High-speed			
7	FPD2P	Venu1417P	Portable	34.6×42.0	2304×2800	150
8	FPD2PU	Venu1417PU	Portable updating			
9	FPD2D	Venu1417D	High-speed			
10	FPD2DU	Venu1417DU	High-speed updating			
11	FPD2C	Venu1417C	Cassette			
12	FPD2CU	Venu1417CU	Cassette updating			

2.3 Characteristic

- Fixed static Flat Panel Detector used for general radiography.
- Sync-Shot exposure trigger and/or Automatic Exposure Control.
- Cameralink and Gigabit Internet interface.
- GOS or CsI scintillation screen.
- Support multiple type of Pixel binning mode.
- Capable for tomosynthesis and energy subtraction (applied with only –D model).

2.4 Intended use

This device provides digital X-ray imaging for diagnosis of disease, injury, or any applicable health problem. The image is obtained as the result of imaging X-ray passing through the human body and being detected by the device. This device is not intended for mammography or dental applications.

For DR System Maker

iRay will provide detector and software support for integration of system. If the detector is intended to assemble mobile DR system, the integrated power and data cable must be ordered not longer than 2m, and the cable must be put in the fixed position, not do this it may cause the DR system be toppled.

For Distributor

iRay will provide detector and software support for upgrading of system.

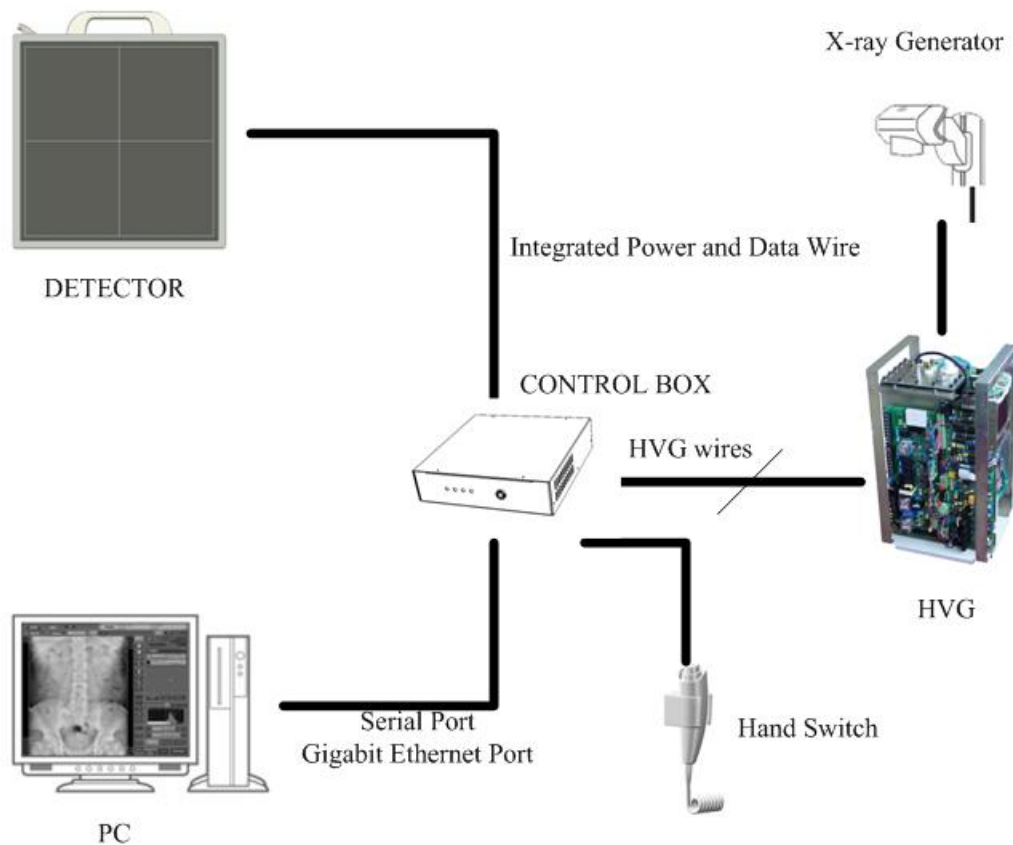
2.5 Standard configuration

The Venu1717 detector comes with a power supply which connects to 100-240 AC outlet and generates DC voltages needed by the detector.

Venu1717 subtypes ending with suffix -I or -A are equipped with internal x-ray sensors which automatically detect the x-ray and synchronize image acquisition with the x-ray exposure, therefore do not need to be connected to high-voltage generator of the user's DR system. Venu1717 subtypes ending with the suffix -m are not equipped with any internal x-ray sensor and need to be connected to the user's high-voltage

generator through a supplied cable for synchronization between image acquisition and x-ray exposure.

The detector shall be connected to a computer through the Ethernet cable for data transfer. There is also a serial cable connecting the detector to the computer for detector configuration and acquisition commands.



2.6 Main Specifications

Purpose:	General radiography
Pixel pitch:	139 μ m
Scintillator:	GOS/CsI
Effective imaging area:	427 \times 427 mm
Gray scale:	16384 gradations
Environmental requirements	
Operation	
Temperature:	10 $^{\circ}$ C to 40 $^{\circ}$ C
Humidity:	10 to 70% (without condensation)

Atmospheric pressure: 700 to 1060 hPa
Transportation (in package at point of purchase)
Temperature: -20°C to 55°C
Humidity: 10 to 70% (without condensation)
Atmospheric pressure: 700 to 1060 hPa

Dimensions and mass:

Approx. 486 × 486 × 25 mm

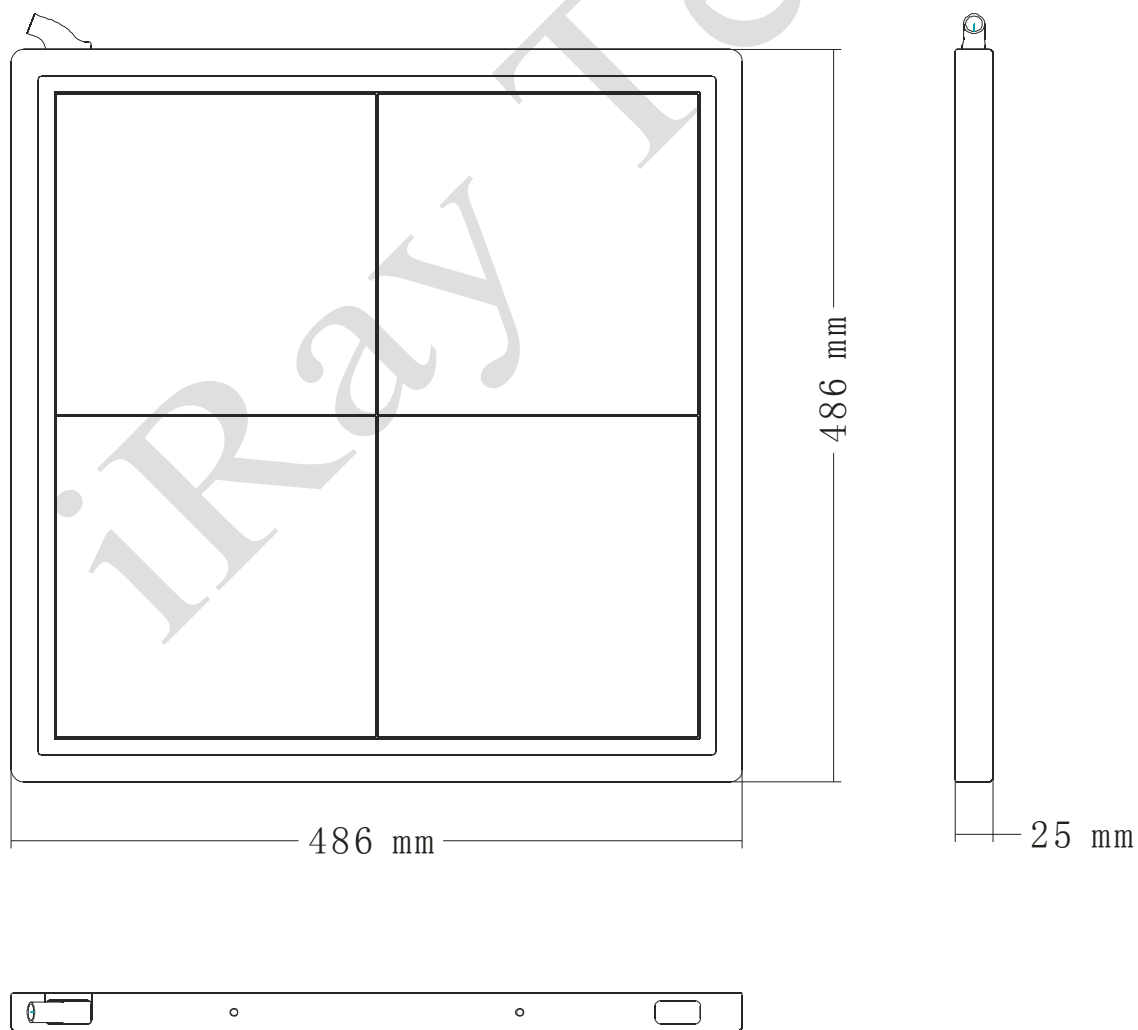
Approx. 5.5 kg

Sensitivity(RQA5) 10nGy/Gray Scale (GOS)
7nGy/Gray Scale (CsI)

Image quality

DQE: 0.35(GOS) 0.70(CsI) : (RQA5,2uGy)

Dimensional diagram:



2.7 Classification of the Equipment

The equipment and its applied part are suitable for the following classification:

- ÿ The type of protection against electric shock: Class I Equipment
- ÿ The degree of protection against electric shock: Type B
- ÿ The degree of protection against ingress of water as detailed in the current edition of IEC 529: unclassified
- ÿ Not suitable for use in the presence of a FLAMMABLE ANAESTHETIC MIXTURE WITH AIR or WITH OXYGEN OR NITROUS OXIDE
- ÿ The mode of operation: Continuous operation with intermittent loading

3.Chapter III Installation and Operation

The Venu1717 detector must use the specified power supply and shall be connected with the grounding wires.

1. Turn on the computer.
2. Install a Gigabit Ethernet card in the computer if none has been installed.
3. Install **WinPcap** 4.1.2 for the Gigabit Ethernet interface.
4. Connect a ground cable and the power supply cable to the detector.
5. Connect the power supply to a 100-240V AC outlet.
6. Install the control box with interface wires to PC, High-Voltage Generator and detector.
7. Turn on the switch of power supply and the green indicator of the detector shall be lit up.
8. Run one image acquisition software such as iStart or iDemo.

3.1 Quick Start

Before using the detector, user must read the appendix A for details of SDK installation. Then user can use the Quick Start software **iStart**[®] for image acquisition.

3.2 First Image Acquisition

iRay provides a Microsoft Visual Studio (2008) library [IrayAcquireLib.lib](#), and a demo program **iDemo**[®] and its source code to assist the users' integration of the detector into their existing DR system. The library [IrayAcquireLib.lib](#) contains functions for image acquisition and detector configuration. **iDemo** demonstrates the usage of [IrayAcquireLib.lib](#) and provides a simple user interface to acquire and preview x-ray images.

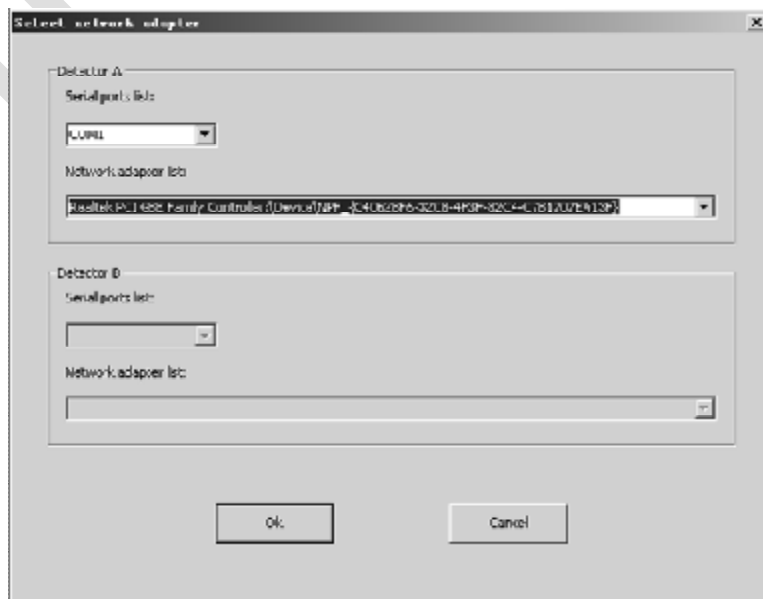
The user can start the **iDemo** program by double click on the executable file **iDemo.exe** included in the CD ROM. **iDemo** loads the acquisition driver and sends the acquisition commands to the detector through a uart port. The image data acquired by Venu1717 will be sent through the Gigabit Ethernet cable to the computer. **iDemo**

can perform offset, gain and defect correction on the image and then display the image on the computer screen.



As shown in the above figure, on the right buttons are classified into 5 classes.

- (1) Control class: “**Start**” button to initialize the Gigabit Ethernet driver and COM port. The user needs to select the Gigabit Ethernet adapter that has been connected to Venu1717 with “show” option selected in “start window” class.



“**Stop**” button to unload the Gigabit Ethernet driver.

After clicking OK, iDemo will test the linking speed of the device.

- (2) Acquire class: “**Prepare**” button to start the scrubbing process of detector.
“**Acquire**” button to acquire an image from the detector.
- (3) Other class: “**Config**” button to read, write or reset the settings of detector. “**Save**” button to save the image acquired from the detector with DICOM format.
- (4) GBE Window class: “**Set**” button to set the user selected Gigabit Ethernet device and COM port as the default setting. Unselect the “**Show**” option will avoid GBE and COM selection window in step (1) popping up. Idemo will load the default setting.
- (5) Correction class: iDemo provide correction wizard to generate the offset, gain and defect correction. For offset correction, user can select no offset, pre-offset or post-offset mode.

3.3 FPD Config

Click “**config**” button to read or write FPD configuration through COM port.

The screenshot shows a software window titled "Config" with a blue title bar and standard Windows window controls. The window is divided into several sections:

- Detector Configuration:** Contains input fields for Main Version (3.3.18), Read Version (3.1.5), Product type (1), VT (1.68), PGA (5), Time Span (1800 ms), Acquire Delay (0 ms), Integrate (100 μs), and Clear Time (1500 ms). It also includes radio buttons for "Sen Sel" (I, II, III), "Gain Sel" (GAIN0, GAIN1, GAIN2, GAIN3), and a "Trigger" dropdown menu (set to "Outer"). A "Tube Ready Time" field is set to "Service".
- Other Configuration:** Includes an "Image file name" field (test.dcm) with an "Auto naming" checkbox and a "Browse" button. Below it is a "Read INFO" section with "Read Temp" (0.0 °C) and "Read Humidity" (0.0) fields, and an "SN" field.
- Time Configuration:** Includes "Set Delay" (1000 ms), "Inner Delay" (1000 ms), and "Exp Window" (10000 ms) fields.
- RAD Enable Signal:** Includes radio buttons for "Low Valid" (selected) and "High Valid".

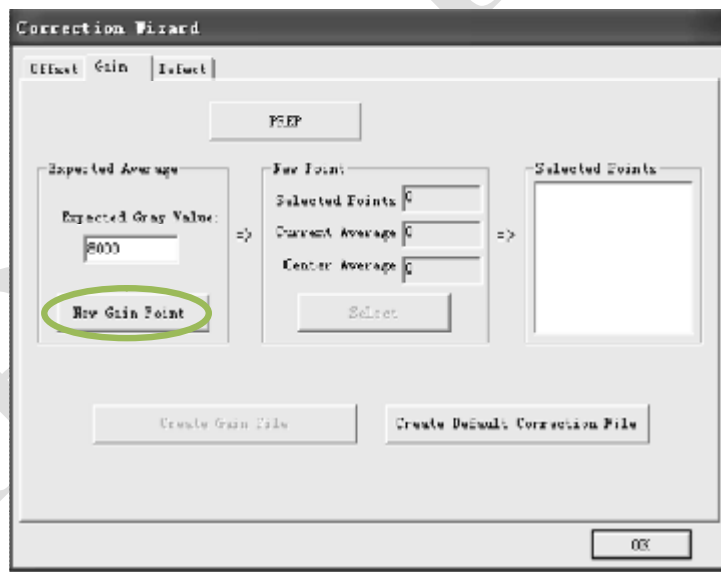
At the bottom of the window, there are five buttons: "Write(ROM)", "Write", "Read", "Reset", and "Exit".

- Main version: firmware version of Main Board
 Read version: firmware version of Read board
 VT, PGA, Time Span, integrate, clear time:
 Factory parameters, please don't modify
 Acquire Delay: in inner trigger mode, the delay from T-AEC trigger to image acquisition.
 Sen sel: intrinsic AEC sensor selection, only works with FPD has build in AEC function.
 Gain sel: intrinsic AEC gain parameter, only works with FPD has build in AEC function.
 Set Delay: time span between scrubbing and acquisition.
 Exp Window: maximal waiting time for FPD from scrub to acquisition.
 Trigger: inner trigger, refer to chapter 4.6.2
 outer trigger, refer to chapter 4.6.1
 software trigger, refer to chapter 4.6.3

3.4 Gain correction

Gain correction file should be generated before image acquisition by the following steps:

- (1) select "post" offset selection
- (2) Press "Create" button and select "Gain" tab in "Correction Wizard" window
- (3) Input expected gray scale of image center into "Expected Gray Value" before exposure, and press "new gain point".



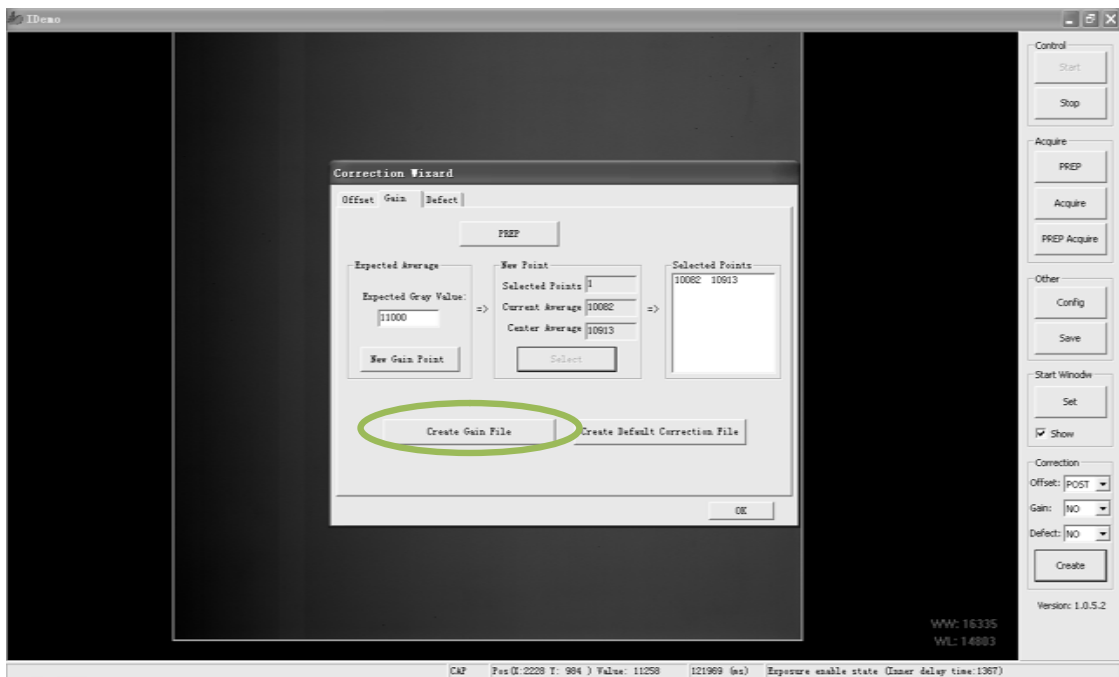
- (4) In "inner trigger" mode, click "prep" bottom and wait for message in status bar change from "Exposure prohibited state" to "Exposure enable state" and radiate.
 in "outer trigger" mode, radiate directly



- (5) After the upload of image, software will calculate the overall average and center average of this image and display them in "New Point" sector. If center average value is far from expected value, please adjust X ray dose and radiate again or modify expected Gray value to

make them match.

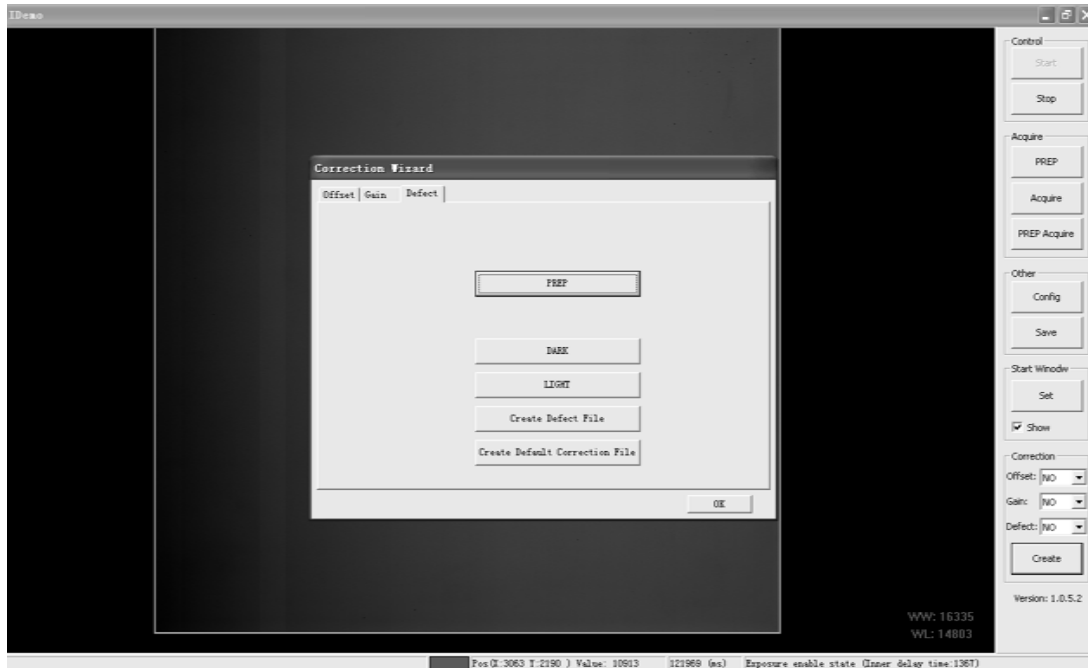
- (6) Press “select” bottom, and this point will be added to “Selected points” list



- (7) Click “Create Gain File” to finish the process.
- (8) Multiple gain point correction file can be generated by redo step (3) to step (6) several times with different radiation dose.

3.5 Defect Calibration

- (1) Select "no" in Offset, Gain and Defect options.
- (2) Press "Create" button and select "Defect" tab



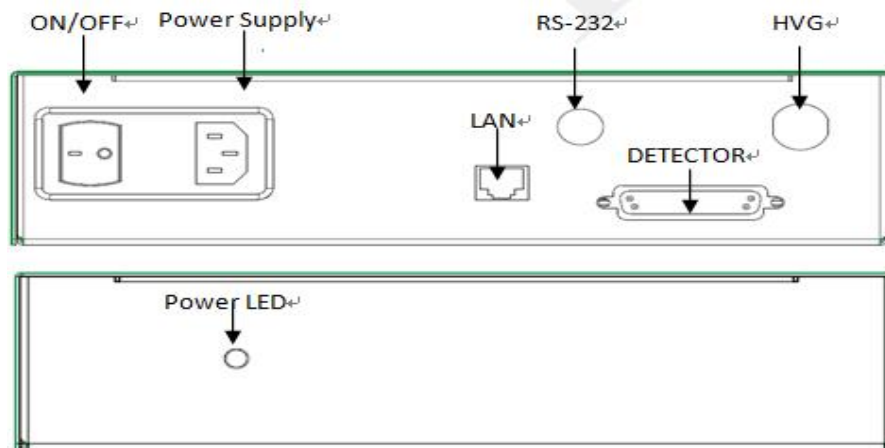
- (3) Press "Dark" button and wait for dark images acquisition
- (4) Press "Light" button
- (5) In "inner trigger" mode, press "prep" and wait for status bar to change from "Exposure prohibited" to "Exposure enable status" and radiate. Follow message box instructions to repeat radiate 5 times.
In "outer trigger" mode, radiate directly. And follow message box instructions to repeat radiate 5 times.
- (6) Click "Create Defect File" to finish the process

3.6 Acquire calibrated image

Acquire images with "post" in offset options, "Curr" in Gain options and "Curr" in Defect options selected.

4. Chapter IV Control Interface

Control box is the relay device between computer and detector. As shown in the figure, there are 5 connection ports at the back of the control box. Some of this interface may not provide function, please contact your dealer.



- Power Supply: Three-phase (electric) outlet for AC110-240V power input.
- LAN: Gigabit Ethernet port connected to PC.
- RS-232: Serial port connected to PC.
- HVG: Control interface connected to High-Voltage Generator.
- Detector: Integrated interface with power and data connected to detector.

4.1 AC Input

AC input shall be connected to AC 110-240V three-phase power. Be careful confirm that the AC socket must have right earth connection terminals. The control box shall conforming to IEC 60601-1.

4.2 Serial Port

The Serial Port shall be connected with the D-Sub 9 serial cable (included in the package) to a serial port of the user's computer. The serial port is used to transmit image acquisition and detector configuration commands from the user's computer to

the detector.



If the pc does not have a standard serial port, the user can use usb-serial converter. User can also use the usb-serial converter to connect with PC.

4.3 Gigabit Ethernet Port

The GBE port shall be connected with an Ethernet cable to a Gigabit Ethernet Port of the user's computer. The GBE port transmits image data through Gigabit Ethernet protocol.



For NIC (Network Interface Card), Intel Pro EXP9301CT PRO Gigabit Network Adapter with PCIe interface is recommended. If the user prefers any other Gigabit Network Adapter, only those PCIe interface should be considered.

4.4 HVG Interface

The HVG interface with 16 pins is connecting to HVG to synchronize HVG and the detector. Next Interface for Venu1717M, Contact the manufacture for other detector.

Wire Label	Wire Color	J1	I/O	Signal Description
HVG_GND	Gray&Shield	1	/	GND
AEC_SELA	Yellow	2	O	AEC sensor selected signal A
AEC_SELB	Blue	3	O	AEC sensor selected signal B
HVG_GND	Green	4	I	GND
AEC_OUT	Brown	5	O	AEC analog output signal
AEC_SELC	Orange	6	O	AEC sensor selected signal C
PREP	Red	7	I	This signal is started by hand switch. The signal sent to Detector to "Clear the Pixels". Detector will finish the "Clear" within fixed time. When the hand switch pushed, the Anode of Tube will start to rotate at high speed meanwhile with the Detector "Clear".

RAD_EN	Purple	8	O	The Anode is ready and Generator could start Exposure. If Detector returns the RAD_EN, the Generator will start Exposure immediately.
RAD	Black	9	I	The Generator started a Exposure and send the Exposure signal to Detector. Detector will start "Readout" at the back porch of Exposure.

4.5 T-AEC Module

The detector has an embedded well-proved T-AEC (Traceless AEC) module with Ionization Chamber and AEC board for automatic exposure control. The AEC module provides a very stable inner trigger signal of calibrated pulses with a resolution of up to 5nGy. The energy range is from 40kV to 150kV.

4.6 X-ray Image Acquisition

Venu1717 provides carefully designed functions and commands for the end users to acquire X-ray images under various environments. The user needs to select one of three acquisition trigger modes:

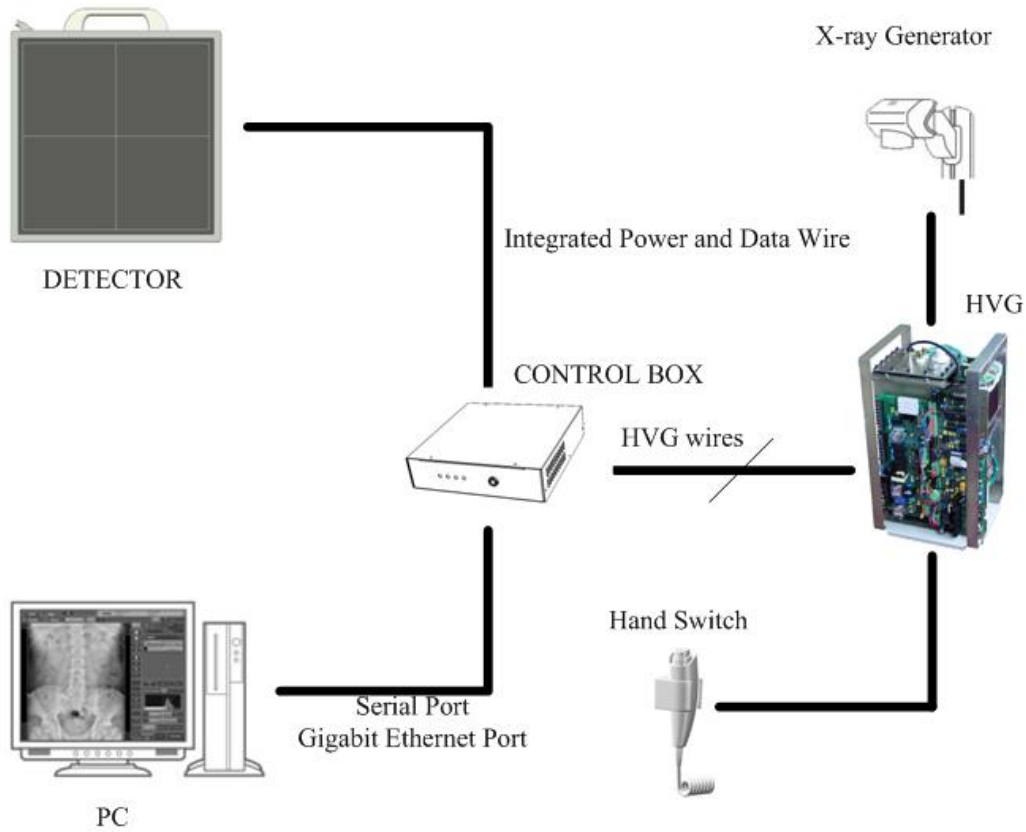


The trigger mode must be set correctly before image acquisition, otherwise image acquisition may not work properly.

4.6.1 Outer-trigger mode, in which acquisition is triggered by the HVG RAD signals coming from the HVG to the Control Box HVG interface. This mode is recommended for DR system manufacturer. User can operate the hand switch for RAD and X-ray image acquisition.

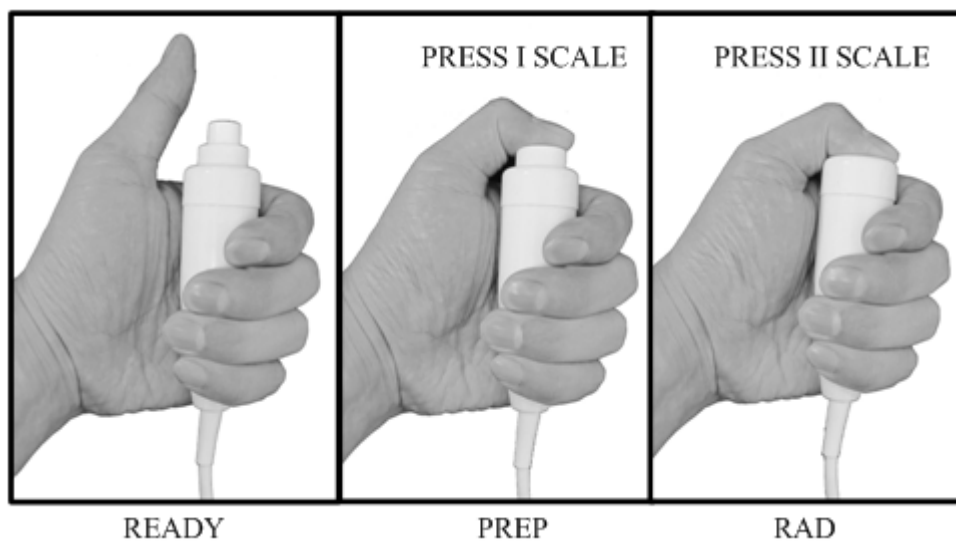
I System installation

As figure, the integrated power and data wire shall be connected between detector and control box, and serial port wire and gigabit Ethernet port wire shall be connected between PC and control box.



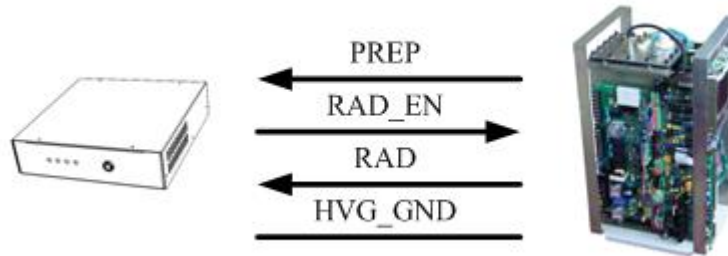
I X-ray Trigger method

User can operate the X-ray exposure hand switch to start the tube and fire the X-ray. The hand switch shall be connected to specified interface of HVG.

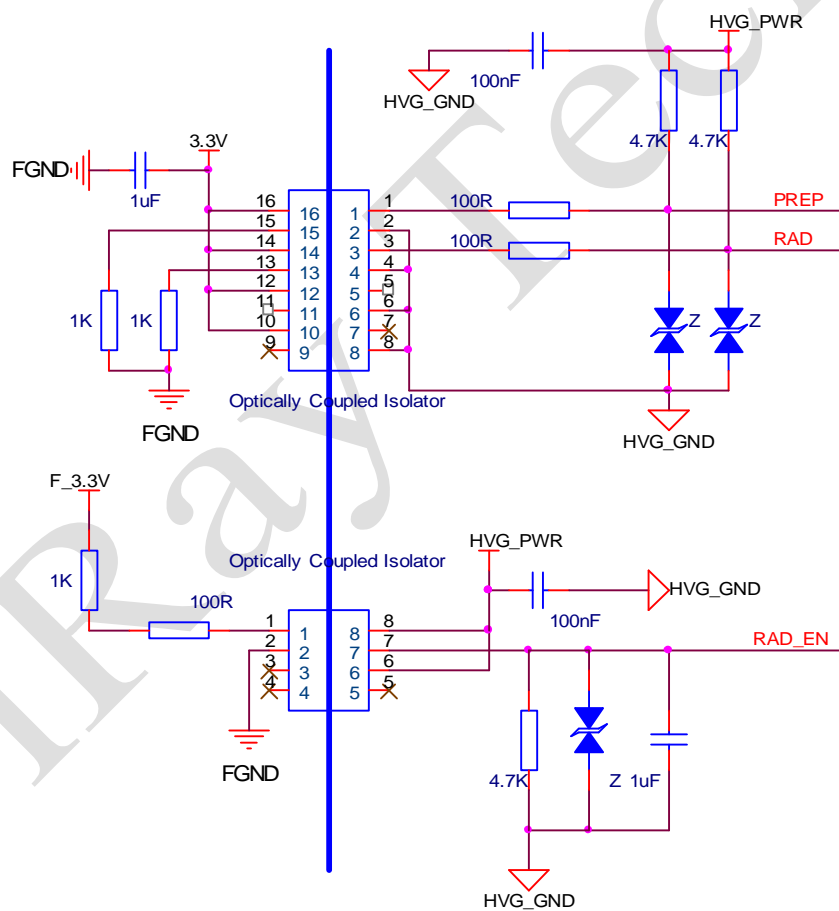


I HVG connection

Hvg connection wires include PREP, RAD_EN, RAD, HVG_GND.



For user reference, the inside isolator interface to HVG in control box is as figure.



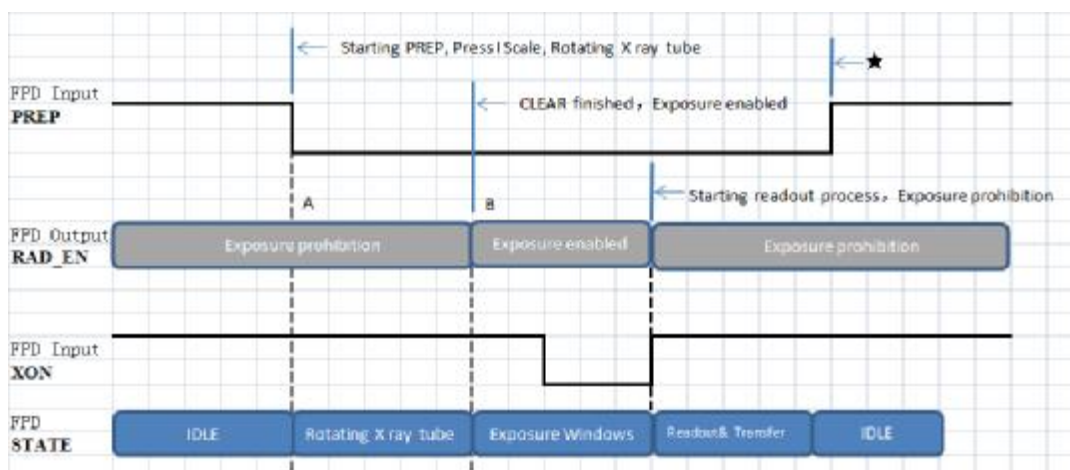
The PREP, RAD_EN and RAD signals are all low level valid.

HVG_PWR(+5V) is only used by Detector internally.

I X-ray image acquisition timing

Exposure Windows time could be set up by software, **RAD_EN** could be set up High Level effective or Low Level effective. **RAD_EN** is Low Level effective by factory.

As timing figure, idle ready status, PREP and RAD signals of HVG are high, and **RAD_EN** signal of control box is low.



When user press hand switch I scale for exposure requirement, PREP will pull low and **RAD_EN** pull high. Now the HVG is in exposure prohibition status about 1500ms, then **RAD_EN** shall pull low. Any time (as short as possible) user can fire the X-ray, with the **RAD** pull a low pulse. Exposure finished, detector shall readout the image data and transfer.

4.6.2 Inner-trigger mode, in which acquisition is triggered by internal sync-shot sensor of the detector. This mode is recommended for DR system manufacturer and DR system upgrading and upcycling. User can operate the hand switch for **RAD** and X-ray image acquisition.

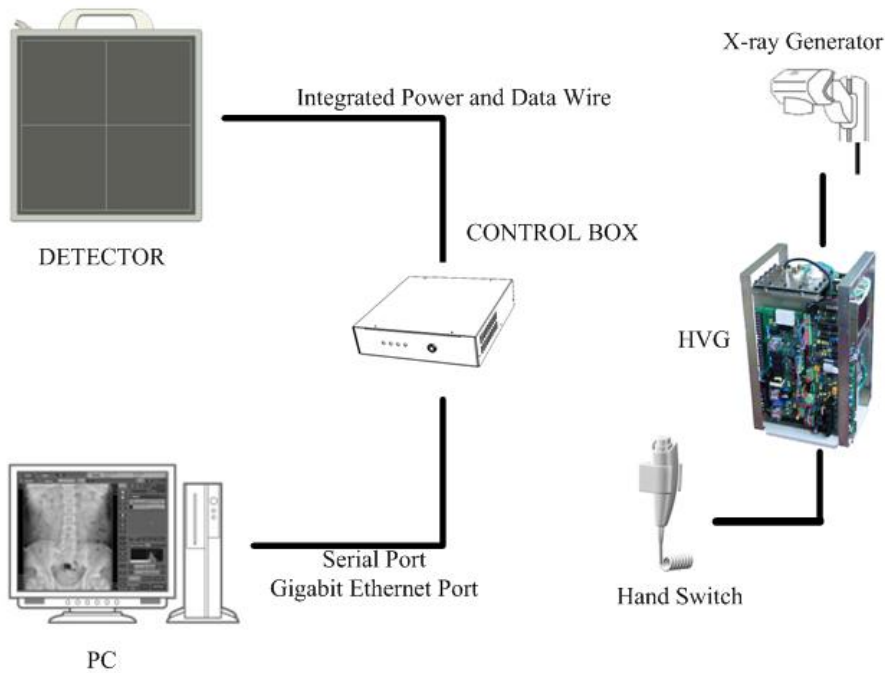
I System installation

As figure, the integrated power and data wire shall be connected between detector and control box, and serial port wire and gigabit Ethernet port wire shall be connected between PC and control box. No wires need to connected to HVG. User only shall operate the hand switch to fire X-ray.

i Information

The T-AEC module shall be installed in detector. Only the –I and –A type detector can support inner-trigger mode function.

I X-ray Trigger method



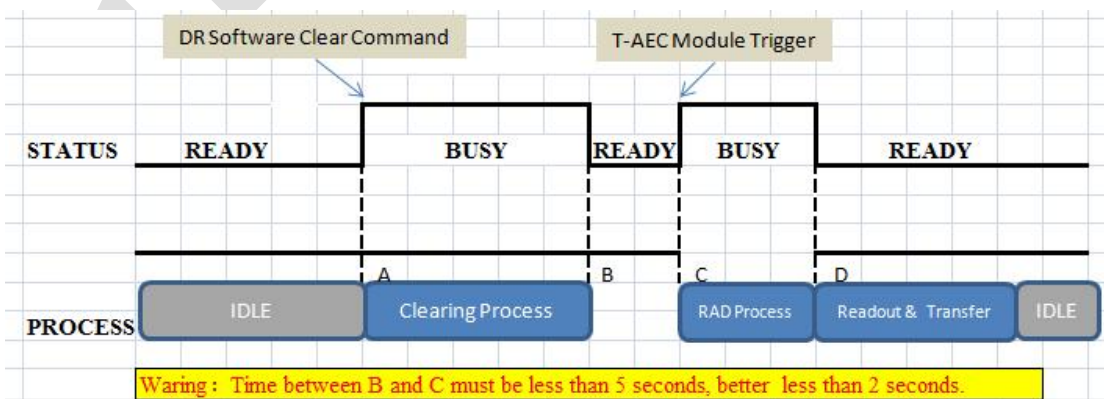
User can operate the X-ray exposure hand switch to start the tube and fire the X-ray. The hand switch shall be connected to specified interface of HVG

I HVG connection

None .

I X-ray image acquisition timing

As timing figure, idle ready status is waiting for the DR software clear command to start clear process.

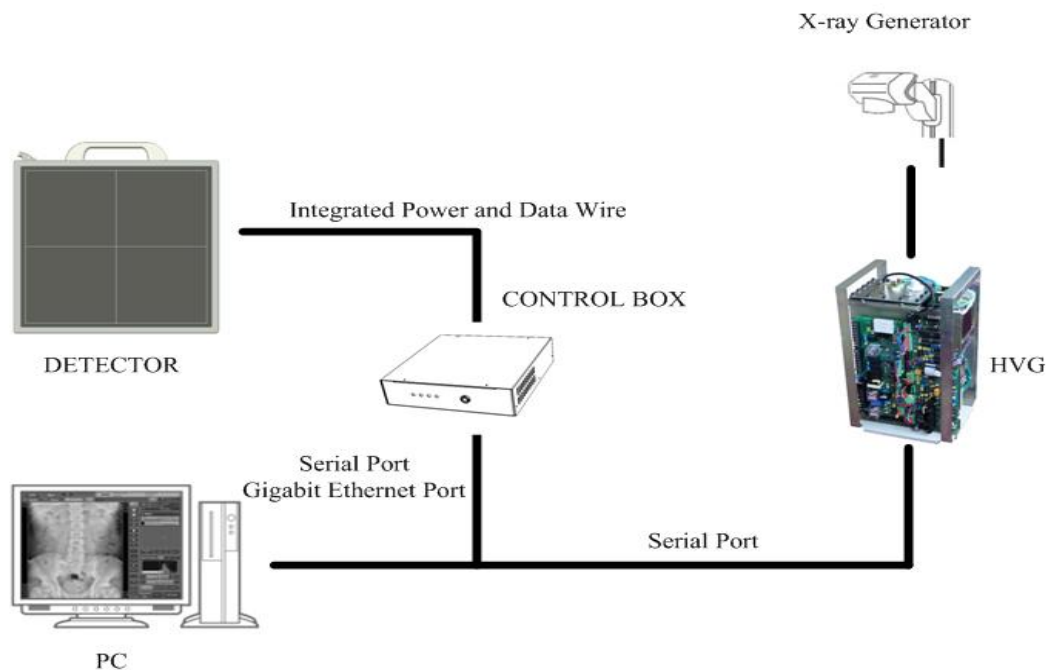


After 1500ms clearing process, detector shall be in ready status again. Any time (as short as possible) user can fire the X-ray by operate the hand switch. Exposure finished, detector shall readout the image data and transfer.

4.6.3 Soft-trigger mode, in which acquisition is triggered by the DR software through the integrated data wires. This mode is recommended for special applied DR system manufacturer.

I System installation

As figure, the integrated power and data wire shall be connected between detector and control box, and serial port wire and gigabit Ethernet port wire shall be connected between PC and control box. Another PC shall connect to HVG for exposure.



I X-ray Trigger method

DR software shall control the HVG by communication port.

I HVG connection

None .

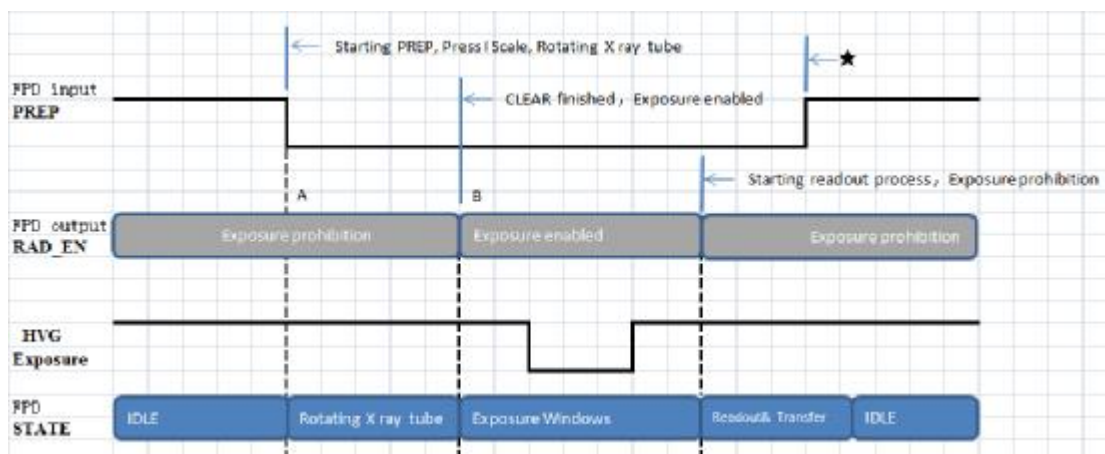
I X-ray image acquisition timing

At soft-trigger mode, DR software clear command start the clear process, meanwhile control the HVG for prepares. When detector is in clearing process, busy command shall be returned. Clearing finished, ready command shall be returned and DR software can control the HVG to fire X-ray any time. RAD process time can be attained by DR software or T-AEC module. Once RAD process is over, acquisition command shall be send to detector for readout and transfer.

4.6.4 PREP mode

All process of Clear-Readout & Transfer are triggered by PREP I Scale or the signal of finished the rotating of X ray tube

Exposure Windows time could be set up by software, XON don't need to be connected, PREP & RAD_EN should be connected.



4.7 Event

About Venu1717, the concept **EVENT** should be noted

Y Prep Event (P-EVENT)

When prep event occur, detector will start clearing lag process for ready. The clear time of Single Driver type is 1500ms, and Dual Driver type is 800ms.

Applied Trigger Mode	Trigger Method
Outer-trigger mode	Prep signal of HVG
Inner-trigger mode	Software command
Soft-trigger mode	Software command

Y Acqu Event (A-EVENT)

When acqu event occur, detector will start progressive scanning and acquisition the image of TFT matrix sensor. In addition, use can adjust the acqu event delay time for some requirements.

Applied Trigger Mode	Trigger Method
----------------------	----------------

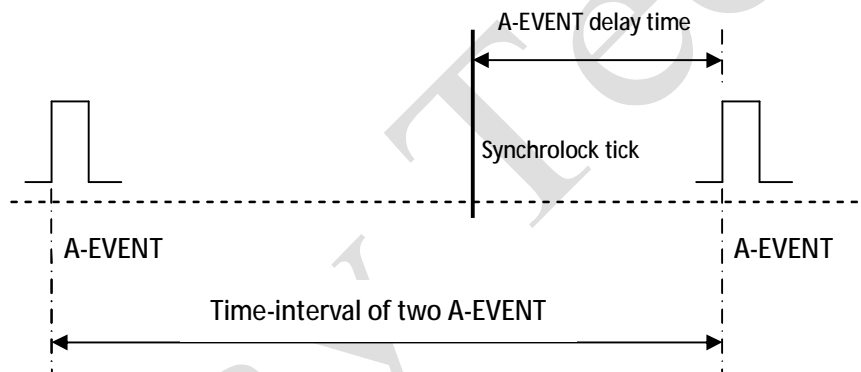
Outer-trigger mode	RAD signal of HVG
Inner-trigger mode	Inner AEC trigger signal
Soft-trigger mode	Software command

¶ Prep Acqu Event (PA-EVENT)

When prep acqu event occur, detector will start clearing lag process, delay some time , then start progressive scanning and acquisition the image of TFT matrix sensor automatically. The PA-EVENT may be applied in post-offset image acquisition.

¶ Serial Acqu Event (SA-EVENT)

When serial acqu event occur, detector will start progressive scanning and acquisition the image continuously.



If the A-EVENT delay time is set by exposing time, and fire the X-ray at the synchrolock tick, DR software can realize the dynamic acquisition.

¶ Time Event (T-EVENT)

A time counter is in detector for record time (ms) between the recent P-EVENT and A-EVENT. The P-EVENT will start the counter from 0, and then E-EVENT will get the current counter value as the tick time. Meanwhile the tick time will be return. DR software can get this value then invoke the PA-EVENT for precise post-offset.

5. Chapter V Regulatory Information

The product safety standards that apply to the Venu1717, which includes the main unit detector and Control Box.

5.1 Medical equipment safety standards

u Medical equipment classification

Type of protection against electrical shock	Internally powered equipment Class I Equipment, with wiring unit
Degree of protection against electrical shock	Type B Applied Parts
Degree of protection against ingress of water	IP20
Mode of operation	Continuous operation
Flammable anesthetics	Not suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide

u Product safety standards

MDD (93/42/EEC) Medical	Medical Device Directive
EN ISO 13485:2003+AC:2007	Medical devices --- Quality management systems --- Requirements for regulatory purposes
EN 60601-1:1990	Medical electrical equipment – Part 1: General requirements for safety
EN 60601-1-1:2001	Medical electrical equipment – Part 1-1: Collateral standard: Safety requirements for medical electrical systems
EN 60601-1-2:2001	Medical electrical equipment – Part 1-2: Collateral standard: Electromagnetic compatibility – Requirements and tests
EN 60601-1-3:1994	Medical electrical equipment – Part 1-3: Collateral standard: General requirements for radiation protection in diagnostic X-ray equipment
EN 60601-2-32:1994	Medical electrical equipment – Part2: Particular requirements for the safety of associated equipment of X-ray equipment

5.2 Guidance and manufacture's declaration for EMC

U Electromagnetic emissions

The Venu1717 detector is intended for use in the electromagnetic environment specified below. The customer or the user of the Venu1717 detector should assure that it is used in such an environment.

Emission Test	Compliance	Electromagnetic Environment - Guidance
RF emissions CISPR 11	GROUP1	It uses RF energy only for its internal function. Its RF emissions are very low and are not likely to cause any interference in nearby electromagnetic equipment
RF emissions CISPR 11	Class B	It is suitable for use in all establishments other than domestic 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 B	
Voltage fluctuations/ flicker emissions IEC 61000-3-3	Pass	


U Electromagnetic immunity

The Venu1717 detector is intended for use in the electromagnetic environment specified below. The customer or the user of the Venu1717 detector 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 ±8kV 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	±1 kV differential	±1 kV differential	Mains power quality should be that of

Chapter V Regulatory Information

IEC 61000-4-5	mode ±2 kV common mode	mode ±2 kV common mode	a typical commercial or hospital environment.
Voltage dips, short 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 cycle. 70% UT (30% dip in UT) for 25 cycle. <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 cycle. 70% UT (30% dip in UT) for 25 cycle. <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 that requires continued operation during power mains interruptions, it is recommended that be powered from an uninterruptible power supply.
Power frequency (50/60Hz) 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.
Conducted RF IEC 61000-4-6	3 Vrms 150kHz to 80MHz	3 Vrms	Portable and mobile RF communications equipment should be used no closer to any part of the Model VENU1717, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance $d = 1,2 \sqrt{P}$ $d = 1,2 \sqrt{P}$ 80 MHz to 800 MHz $d = 2,3 \sqrt{P}$ 800 MHz to 2,5 GHz 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). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey,a should
Radiated RF IEC 61000-4-3	3 V/m 80MHz to 2.5GHz	3 V/m	

			<p>be less than the compliance level in each frequency range.</p> <p>Interference may occur in the vicinity of equipment marked with the following symbol:</p> 
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NOTE: UT is the a.c. mains voltage prior to application of the test level.

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 Venu1717 detector is used exceeds the applicable RF compliance level above, the Venu1717 detector should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the Venu1717 detector.

b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than [V1] V/m.

u Recommended separation distances between portable and mobile RF communications equipment and the Venu1717 detector

The Venu1717 detector is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the Venu1717 detector can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the Venu1717 detector 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		
	150kHz~80 MHz $d = 1.2 \sqrt{P}$	80 MHz~800 MHz $d = 1.2 \sqrt{P}$	800 MHz ~2.5GHz $d = 2.3 \sqrt{P}$

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.

⌋ Below cables information are provided for EMC reference.

Cable	Recommended cable length	Shielded or Unshielded	Number	Cable classification
Controlbox Input Power Cable	3m	Unshielded	1 Set	AC Power
RS232 to PC Cable	>3m	Shielded	1 pcs	Signal
LAN port Cable	>3m	Shielded	1 pcs	Signal
Interface to HVG Cable	>3m	Shielded	1 pcs	Signal
Data Cable	>3m	Shielded	1 pcs	Signal

⌋ Important information regarding Electro Magnetic Compatibility (EMC)

The Venu1717 detector needs special precautions regarding EMC and needs to be installed only by iRAy or authorization engineer and put into service according to the EMC information provided in the user manual; The Venu1717 detector in use may be susceptible to electromagnetic interference from portable and mobile RF communications such as mobile (cellular) telephones. Electromagnetic interference may result in incorrect operation of the system and create a potentially unsafe

situation.

The Venu1717 detector conforms to this EN60601-1-2:2007 standard for both immunity and emissions.

Nevertheless, special precautions need to be observed:

The use of accessories, transmitters and cables other than those specified by this User Manual, with the exception of accessories and cables sold by iRay of the Venu1717 detector as replacement parts for internal components, may result in increased EMISSIONS or decreased IMMUNITY of the Venu1717 detector.

The Venu1717 detector should not be used adjacent to or stacked with other equipment. In case adjacent or stacked use is necessary, The Venu1717 detector should be observed to verify normal operation in the configuration in which it will be used.

Description and Specification of ringcore

Part number: 7427154

Description: STAR-RING ringcore with plastic case



Manufactory: Würth Elektronik Co.

The recommended use of ringcore shown as following:

- a) The RS232 to PC Cable should be winding more than 2 turns near the RS232 port on the controlbox .
- b) The Interface to HVG Cable should be winding more than 2 turns near the Interface port on the controlbox.
- c) If USB to RS232 cable were used, the cable should be winding more than 2 turns near the USB port.

6.Chapter VI Imaging Software SDK

The imaging software library **IrayAcquireLib.lib** provides the fundamental functions for detector configuration and image acquisition. A program iDemo has been included in the package to demonstrate how to use this library. Please note that the images acquired from the **IrayAcquireLib.lib** have only been modestly processed and the users need to develop their own software with a separate image processing engine.

6.1 Description of Library (IrayAcquireLib.lib)

Item	Description
Detector Connection	
Acquisition_Initialize	To initialize the SDK library.
Acquisition_Close	To close the SDK library.
Acquisition_SetAecCallback	The callback function for detector prepare.
Acquisition_SetComCallback	The callback function of serial port.
Acquisition_GigeAdapterObjectSetImageCallback	The callback function of image acquisition.
Acquisition_GigeGetAdapterList	To get the list of network adapters.
Acquisition_GigeFreeAdapterList	To uninstall the network adapter.
Acquisition_ResetDRConfig	To reset the detector.

Image Acquisition	
Acquisition_StartAecReady	Detector prepare command.
Acquisition_GetDRConfigClearTime	To get the time needed for detector prepare. Note that this time is fixed for 1500ms
Acquisition_SetDRConfigClearTime	To set the time needed for detector prepare. Note that currently this time is fixed and not configurable.
Acquisition_StartAcquisition	Image acquisition command. The detector will acquire an image after a certain delay upon receiving the command. The delay is set by Acquisition_SetDRConfigAecExpTime
Acquisition_GetDRConfigAecExpTime	To get the delay for image acquisition command.
Acquisition_SetDRConfigAecExpTime	To set the delay for image acquisition command. Range: 0 ~ 65535, Unit: ms.
Acquisition_StartClearTimeAcquisition	Prepare + acquisition command. The command includes a delay between the end of prepare and the beginning of acquisition. Normally the delay can be set as the number obtained from Acquisition_GetDRConfigSetDelayTime or Acquisition_GetInnerDelayTime
Acquisition_GetDRConfigSetDelayTime	To get the delay between prepare and acquisition set previous in the detector.
Acquisition_SetDRConfigSetDelayTime	To set the delay between prepare and acquisition in the detector. Range: 0 ~ 65535, Unit: ms.
Acquisition_GetInnerDelayTime	To get the actual delay between prepare and acquisition happened most recently. Range: 0 ~ 65535, Unit: ms
Acquisition_StartSequence	Command for continuous acquisition.

Acquisition_StopSequence	To stop the continuous acquisition.
Acquisition_GetDRConfigSerialTimeSpan	To get the interval between continuous acquisition.
Acquisition_SetDRConfigSerialTimeSpan	To set the interval between continuous acquisition. Range: 1800 ~ 65535, Unit: ms.
Detector Configuration	
Acquisition_ReadDRConfig	To read all the detector configurations.
Acquisition_GetDRConfigVersion	To get the main board firmware version.
Acquisition_GetDRConfigVT	To get the charge injection voltage VT.
Acquisition_SetDRConfigVT	To set the charge injection voltage VT. Range: 1.25 ~ 4.50, Unit: Volt
Acquisition_GetDRConfigPGA	To get the PGA number of the detector.
Acquisition_SetDRConfigPGA	To set the PGA number of the detector. Range: 0,1,2,3,4,5,6,7
Acquisition_GetDRConfigIntegrate	To get the integration time of each pixel.
Acquisition_SetDRConfigIntegrate	To set the integration time of each pixel. Range: 100(fixed) Unit: us Note: currently this value cannot be changed.
Acquisition_GetDRConfigAecSensor	To get the AEC sensor number.
Acquisition_SetDRConfigAecSensor	To set the AEC sensor number.
Acquisition_GetDRConfigAecGain	To get the gain of the AEC sensor.
Acquisition_SetDRConfigAecGain	To set the gain of the AEC sensor.
Acquisition_GetDRConfigAecMode	To get the trigger mode of the detector.

Acquisition_SetDRConfigAecMode	To set the trigger mode of the detector. 0: Outer trigger mode, inner trigger is disabled, HVG trigger is enabled. 1: Inner trigger mode, inner trigger is enabled, HVG trigger is disabled 2: Software trigger mode, both inner trigger and HVG trigger are disabled. 3: Service trigger mode, all triggers are enabled.
Acquisition_DRConfigUpdateAll	To update all the detector configuration.
Acquisition_QueryTemperature	Temperature command.
Acquisition_QueryHumidity	Humidity command.
Acquisition_QueryReadVersion	Read version command.
Acquisition_GetTemperature	To get the temperature value.
Acquisition_GetHumidity	To get the humidity value.
Acquisition_GetReadVersion	To get the read version number.
Image Correction	
Acquisition_GetImageSize	To get the width and height of the image.
Correction_SetCorrectCallback	To set the calibration callback function.
Correction_GenerateOffsetFile2	To generate offset template.
Correction_SetOffsetBaseValue	To set offset base value.
Correction_GenerateGainFile	To generate gain template.
Correction_SelectGain	To select one bright image (used in the generation of gain template).
Correction_UnloadGainData	To unload gain template tempera files.
Correction_SaveGainFile	To save gain template file.
Acquisition_GetDarkFrames2	To acquire several (by default 5) raw dark images.

Acquisition_GetLightFrames	To acquire several (by default 5) raw bright images.
Correction_IsCreateLightFile	To generate a bright image (used to generate defect template).
Correction_CreateDefectFile	To generate defect template.
Correction_SetDoOffset2	To set pre-offset correction.
Correction_SetAutoOffset	To set post-offset correction.
Correction_SetDoGain	To set gain correction.
Correction_SetDoDefect	To set defect correction.
Correction_GetDoOffsetStatus	To get the current status of offset correction.
Correction_GetDoGainStatus	To get the current status of gain correction.
Correction_GetDoDefectStatus	To get the current status of defect correction.

6.2 Description of Function:

6.2.1 Acquisition_Initialize

The function is initializing base information, create uart device object, create NIC object, connection acquire lib.

```
ACQUIRE_HEADER_API INT Acquisition_Initialize(  
INITIALIZEINFO initInfo,  
PCHAR pComName,  
PCHAR pAdapterName,  
HANDLE &hAdapter  
);
```

Description of parameters:

initInfo: Initialize information, it has the number of detector and the full path of config file and the path of correct file.

pComName: The number of used uart port, such as COM1.

pAdapterName: The name of network card object.

hAdapter: The handle of return object.

Return values:

1: Successful.

-1: Failed.

6.2.2 Acquisition_Close

The function unloads the uart device object and NIC object, close acquire lib.

```
ACQUIRE_HEADER_API void Acquisition_Close (  
HANDLE hAdapter  
);
```

Description of parameters:

hAdapter: The network card object.

6.2.3 Acquisition_SetAecCallback

The function is set callback function of clear information. The parameter pAecInfo is function pointer of clear information. When user creates the global function to transfer the parameter pAecInfo, then this function is received by running library and registered. Once clear information ready, the callback function will return

the clear information by this function pointer.

```
ACQUIRE_HEADER_API void Acquisition_SetAecCallback (  
HANDLE hAdapter,  
AecInfoCallback pAecInfo,  
LPVOID pUser  
);
```

Description of parameters:

hAdapter: The network card object.

pAecInfo: The callback function of clear information.

pUser: The pointer of user.

6.2.4 Acquisition_SetComCallback

The function is set the callback function of uart information. The parameter pComInfo is function pointer of uart information. When user create the global function to transfer the parameter pComInfo, then this function is received by running library and registered. Once uart data is acquisitioned, the callback function will return the uart data by this function pointer.

```
ACQUIRE_HEADER_API void Acquisition_SetComCallback(  
HANDLE hAdapter,  
GetComInfo pComInfo,  
LPVOID pUserInfo  
);
```

Description of parameters:

hAdapter: The network card object.

pComInfo: Uart information.

pUserInfo: The pointer of user.

6.2.5 Acquisition_GigeAdapterObjectSetImageCallback

The function is set the callback function of image information. The parameter pComInfo is function pointer of image information. When user create the global function to transfer the parameter pComInfo, then this function is received by running library and registered. Once uart data is acquisitioned, the callback function will return the image data by this function pointer.

```
void Acquisition_GigeAdapterObjectSetImageCallback(
```

```
HANDLE hAdapter,  
NewDataCallback pImageHandle,  
LPVOID pUser  
);
```

Description of parameters:

hAdapter: The network card object.

pImageHandle: The pointer of callback function.

pUser: The pointer of user.

6.2.6 Acquisition_GigeGetAdapterList

The function is to return the pointer of struct GIGE_ADAPTERNAMELIST. It is a one-way chained list, which has saved the name of network card.

```
GIGE_ADAPTERNAMELIST* Acquisition_GigeGetAdapterList();
```

Return values:

GIGE_ADAPTERNAMELIST: The header of chained list of network card name.

6.2.7 Acquisition_GigeFreeAdapterList

The function is release the list pointer from Acquisition_GigeGetAdapterList.

```
VOID Acquisition_GigeFreeAdapterList(  
GIGE_ADAPTERNAMELIST* pAdapterList  
);
```

Description of parameters:

pAdapterList: The chained list pointer of network card.

6.2.8 Acquisition_StartAecReady

The function is clear detector. The clear time can be obtained from the Acquisition_GetDRConfigClearTime function. The current clear time is a fixed value of 1500 ms, can not be modified.

```
ACQUIRE_HEADER_API BOOL Acquisition_StartAecReady(  
HANDLE hAdapter  
);
```

Description of parameters:

hAdapter: The network card object.

Return values:

FALSE: Failed.

TRUE: Successful.

6.2.9 Acquisition_GetDRConfigClearTime

The function is to get the time needed for detector prepare. Note that this time is fixed for 1500ms.

```
ACQUIRE_HEADER_API WORD Acquisition_GetDRConfigClearTime(  
HANDLE hAdapter  
);
```

Description of parameters:

hAdapter: The network card object.

Return values:

FALSE: Get clear time value.

6.2.10 Acquisition_SetDRConfigClearTime

The function is to set the time needed for detector prepare. Note that currently this time is fixed and not configurable.

```
ACQUIRE_HEADER_API BOOL Acquisition_SetDRConfigClearTime(  
HANDLE hAdapter,  
WORD wTime  
);
```

Description of parameters:

hAdapter: The network card object.

Return values:

FALSE: Set clear time value.

6.2.11 Acquisition_StartAcquisition

Image acquisition command. The detector will acquire an image after a certain delay upon receiving the command. The delay is set by

Acquisition_SetDRConfigAecExpTime.

```
ACQUIRE_HEADER_API bool Acquisition_StartAcquisition(  
HANDLE hAdapter  
);
```

Description of parameters:

hAdapter: The network card object.

Return values:

FALSE: Failed.

TRUE: Successful.

6.2.12 Acquisition_GetDRConfigAecExpTime

The function is To get the delay time for image acquisition command.

```
ACQUIRE_HEADER_API WORD Acquisition_GetDRConfigAecExpTime (  
HANDLE hAdapter  
);
```

Description of parameters:

hAdapter: The network card object.

6.2.13 Acquisition_SetDRConfigAecExpTime

The function is to set the delay for image acquisition command. Range: 0 ~ 65535,
Unit: ms.

```
ACQUIRE_HEADER_API void Acquisition_SetDRConfigAecExpTime (  
HANDLE hAdapter,  
WORD wAecExpTime  
);
```

Description of parameters:

hAdapter: The network card object.

wAecExpTime: The delay time value.

6.2.14 Acquisition_StartClearTimeAcquisition

The function is Prepare + acquisition command. The command includes a delay between the end of prepare and the beginning of acquisition. Normally the delay can be set as the number obtained from **Acquisition_GetDRConfigSetDelayTime** or **Acquisition_GetInnerDelayTime**.

```
ACQUIRE_HEADER_API bool Acquisition_StartClearTimeAcquisition(  
HANDLE hAdapter,  
WORD wDelayTime  
);
```

Description of parameters:

hAdapter: The network card object.

wDelayTime: The delay time value.

6.2.15 Acquisition_GetDRConfigSetDelayTime

The function is to get the delay between prepare and acquisition set previous in the detector.

```
ACQUIRE_HEADER_API WORD Acquisition_GetDRConfigSetDelayTime (  
HANDLE hAdapter  
);
```

Description of parameters:

hAdapter: The network card object.

6.2.16 Acquisition_SetDRConfigSetDelayTime

The function is to set the delay between prepare and acquisition in the detector.

Range: 0 ~ 65535, Unit: ms.

```
ACQUIRE_HEADER_API void Acquisition_SetDRConfigSetDelayTime (  
HANDLE hAdapter,  
WORD wDelayTime  
);
```

Description of parameters:

hAdapter: The network card object.

wDelayTime: Set delay time.

6.2.17 Acquisition_GetInnerDelayTime

The function is to get the actual delay between prepare and acquisition happened most recently.

Range: 0 ~ 65535, Unit: ms.

```
ACQUIRE_HEADER_API WORD Acquisition_GetInnerDelayTime (  
HANDLE hAdapter  
);
```

Description of parameters:

hAdapter: The network card object.

6.2.18 Acquisition_StartSequence

The function is Command for continuous acquisition.

```
ACQUIRE_HEADER_API bool Acquisition_StartSequence(  
HANDLE hAdapter  
);
```

Description of parameters:

hAdapter: The network card object.

Return values:

FALSE: Failed.

TRUE: Successful.

6.2.19 Acquisition_StopSequence

The function is to stop the continuous acquisition.

```
ACQUIRE_HEADER_API bool Acquisition_StopSequence(  
HANDLE hAdapter  
);
```

Description of parameters:

hAdapter: The network card object.

Return values:

FALSE: Failed.

TRUE: Successful.

6.2.20 Acquisition_GetDRConfigSerialTimeSpan

The function is to get the interval between continuous acquisition.

```
ACQUIRE_HEADER_API WORD Acquisition_GetDRConfigSerialTimeSpan (  
HANDLE hAdapter  
);
```

Description of parameters:

hAdapter: The network card object.

6.2.21 Acquisition_SetDRConfigSerialTimeSpan

The function is to set the interval between continuous acquisition

Range: 1800 ~ 65535, Unit: ms.

```
ACQUIRE_HEADER_API void Acquisition_SetDRConfigSerialTimeSpan (
```

```
HANDLE hAdapter,  
WORD wDelayTime  
);
```

Description of parameters:

hAdapter: The network card object.

6.2.22 Acquisition_GetImageSize

The function is get width and height of the image.

```
ACQUIRE_HEADER_API WORD Acquisition_GetImageSize(  
HANDLE hAdapter,  
DWORD &dwWidth,  
DWORD &dwHeight  
);
```

Description of parameters:

hAdapter: The network card object.

dwWidth: Image width.

dwHeight: Image height.

Return values:

FALSE: Failed.

TRUE: Successful.

6.2.23 Acquisition_ReadDRConfig

The function is read current settings of detector.

```
ACQUIRE_HEADER_API BOOL Acquisition_ReadDRConfig(  
HANDLE hAdapter  
);
```

Description of parameters:

hAdapter: The network card object.

Return values:

FALSE: Failed.

TRUE: Successful.

6.2.24 Acquisition_ResetDRConfig

The function is reset the detector. It can reset the firmware of detector and restore

the factory-set value.

```
ACQUIRE_HEADER_API BOOL Acquisition_ResetDRConfig(  
HANDLE hAdapter  
);
```

Description of parameters:

hAdapter: The network card object.

Return values:

FALSE: Failed.

TRUE: Success.

6.2.25 Acquisition_GetDRConfigVersion

The function retrieves the main firmware version.

```
ACQUIRE_HEADER_API WORD Acquisition_GetDRConfigVersion(  
HANDLE hAdapter,  
WORD &wV1,  
WORD &wV2,  
WORD &wV3  
);
```

Description of parameters:

hAdapter: The network card object.

wV1: Product No..

wV2: Release No..

wV3: Amendment No..

6.2.26 Acquisition_GetDRConfigVT

The function is get the external voltage to control the amount of charge dump for TFT charge injection.

```
ACQUIRE_HEADER_API WORD Acquisition_GetDRConfigVT(  
HANDLE hAdapter  
);
```

Description of parameters:

hAdapter: The network card object.

6.2.27 Acquisition_SetDRConfigVT

The function is set the external voltage to control the amount of charge dump for TFT charge injection.

This value range: 1.25 to 4.50. units: Volt (V).

```
ACQUIRE_HEADER_API void Acquisition_SetDRConfigVT(  
HANDLE hAdapter,  
WORD wVT  
);
```

Description of parameters:

hAdapter: The network card object.

6.2.28 Acquisition_GetDRConfigPGA

The function is get the scale of charge level selection.

```
ACQUIRE_HEADER_API WORD Acquisition_GetDRConfigPGA(  
HANDLE hAdapter  
);
```

Description of parameters:

hAdapter: The network card object.

6.2.29 Acquisition_SetDRConfigPGA

The function is set the scale of charge level selection.

```
ACQUIRE_HEADER_API void Acquisition_SetDRConfigPGA(  
HANDLE hAdapter,  
WORD wVGA  
);
```

Description of parameters:

hAdapter: The network card object.

wVGA: The scale of charge level selection. The scope of value is from 0-7.

Default value is 5.

Range	Typical FS Charge Range (Qr) pC	Int FB Cap = $(Qr)/(REEF-REEM)$...pF
0	0.13	0.0929
1	0.25	0.1786
2	0.5	0.3571

3	1.2	0.8571
4	2.4	1.7143
5	4.8	3.4286
6	7,2	5.1429
7	9.6	6.8571

6.2.30 Acquisition_GetDRConfigIntegrate

The function is get exposure window value of detector. The exposure window is used to set the whole time of the clear procedure, it should be large enough to complete the clear procedure.

**ACQUIRE_HEADER_API WORD Acquisition_GetDRConfigIntegrate(
HANDLE hAdapter
);**

Description of parameters:

hAdapter: The network card object.

6.2.31 Acquisition_SetDRConfigIntegrate

The function is set integrate time value of detector.

The current integrate time is a fixed value of 100 us, can not be modified.

**ACQUIRE_HEADER_API void Acquisition_SetDRConfigIntegrate(
HANDLE hAdapter,
WORD wIntegrate
);**

Description of parameters:

hAdapter: The network card object.

6.2.32 Acquisition_GetDRConfigAecSensor

The function is get three auto exposure sensors in the detector. User can select which or how many auto exposure sensors to be used.

**ACQUIRE_HEADER_API void Acquisition_GetDRConfigAecSensor(
HANDLE hAdapter,
BOOL &bSensor1,
BOOL &bSensor2,
BOOL &bSensor3,**

BOOL &bReset

);

Description of parameters:

hAdapter: The network card object.

bSensor1: get exposure sensor.

bSensor2: get exposure sensor.

bSensor3: get exposure sensor.

bReset: reset to the factory setting.

6.2.33 Acquisition_SetDRConfigAecSensor

The function is set three auto exposure sensors in the detector. User can select which or how many auto exposure sensors to be used.

ACQUIRE_HEADER_API void Acquisition_SetDRConfigAecSensor(

HANDLE hAdapter,

BOOL bSensor1,

BOOL bSensor2,

BOOL bSensor3,

BOOL bReset

);

Description of parameters:

hAdapter: The network card object.

bSensor1: set exposure sensor.

bSensor2: set exposure sensor.

bSensor3: set exposure sensor.

bReset: reset to the factory setting.

6.2.34 Acquisition_GetDRConfigAecGain

The function is get four gain coefficient. The four gain coefficient are associated with the auto exposure control sensor's linearity and sensitivity.

ACQUIRE_HEADER_API void Acquisition_GetDRConfigAecGain(

HANDLE hAdapter,

BOOL &bGain0,

BOOL &bGain1,

BOOL &bGain2,

BOOL &bGain3

);

Description of parameters:

hAdapter: The network card object.

bGain0: get gain0 coefficient.

bGain1: get gain1 coefficient.

bGain2: get gain2 coefficient.

bGain3: get gain3 coefficient.

6.2.35 Acquisition_SetDRConfigAecGain

The function is set four gain coefficient.

ACQUIRE_HEADER_API void Acquisition_SetDRConfigAecGain(

HANDLE hAdapter,

BOOL bGain0,

BOOL bGain1,

BOOL bGain2,

BOOL bGain3

);

Description of parameters:

hAdapter: The network card object.

bGain0: set gain0 coefficient.

bGain1: set gain1 coefficient.

bGain2: set gain2 coefficient.

bGain3: set gain3 coefficient.

6.2.36 Acquisition_GetDRConfigAecMode

The function is get the trigger mode of the detector.

ACQUIRE_HEADER_API WORD Acquisition_GetDRConfigAecMode (

HANDLE hAdapter

);

Description of parameters:

hAdapter: The network card object.

6.2.37 Acquisition_SetDRConfigAecMode

The function is to set the trigger mode of the detector.

0: Outer trigger mode, inner trigger is disabled, HVG trigger is enabled.

1: Inner trigger mode, inner trigger is enabled, HVG trigger is disabled

2: Software trigger mode, both inner trigger and HVG trigger are disabled.

3: Service trigger mode, all triggers are enabled

```
ACQUIRE_HEADER_API void Acquisition_SetDRConfigAecMode (  
HANDLE hAdapter,  
WORD wMode  
);
```

Description of parameters:

hAdapter: The network card object.

6.2.38 Acquisition_DRConfigUpdateAll

The function is updating all set parameters of detector.

```
ACQUIRE_HEADER_API BOOL Acquisition_DRConfigUpdateAll(  
HANDLE hAdapter  
);
```

Description of parameters:

hAdapter: The network card object.

Return values:

FALSE: Failed.

TRUE: Successful.

6.2.39 Correction_SetCorrectCallback

The function is set callback function of correct information. The parameter pCorrectInfo is function pointer of correct information. When user creates the global function to transfer the parameter pCorrectInfo, then this function is received by running library and registered. Once correct complete, the callback function will return the correct information by this function pointer.

```
ACQUIRE_HEADER_API void Acquisition_SetCorrectCallback (  
HADNDLE hAdapter,  
CorrectInfoCallback pCorrectInfo,  
LPVOID pUser  
);
```


Description of parameters:

hAdapter: The network card object.

pCorrectInfo: The callback function of correct.

pUser: The pointer of user.

6.2.40 Correction_GenerateOffsetFile2

The function is generate the template file for offset correction. First, user must set the basic value of offset correction by the function Correction_SetOffsetBaseValue() and then acquisition specified numbers of image, which is set by parameter at nOffsetFrame. At the end, according to the callback function Correction_SetCorrectCallback, whether the template file is created will be known. If the return value of Correction_SetCorrectCallback is true, then the template file is generated successful. Or else is failed.

```
ACQUIRE_HEADER_API INT Correction_GenerateOffsetFile2(  
HADNDLE hAdapter,  
WORD nOffsetFrame  
);
```

Description of parameters:

hAdapter: The network card object.

nOffsetFrame: The number of acquisition image.

6.2.41 Correction_SetOffsetBaseValue

The function is set offset base value. The current default value is 100.

```
ACQUIRE_HEADER_API INT Correction_SetOffsetBaseValue(  
HADNDLE hAdapter,  
WORD nBaseValue  
);
```

Description of parameters:

hAdapter: The network card object.

nBaseValue: Offset base value.

6.2.42 Correction_GenerateGainFile

The function is generate gain correction file initialization.

```
ACQUIRE_HEADER_API INT Correction_GenerateGainFile(  

```

HADNDLE hAdapter,
WORD wExpectedValue
);

Description of parameters:

- hAdapter: The network card object.
- wExpectedValue: The expected gray value.

6.2.43 Correction_SelectGain

The function is select a exposure image.

ACQUIRE_HEADER_API void Correction_SelectGain(
HADNDLE hAdapter
);

Description of parameters:

- hAdapter: The network card object.

6.2.44 Correction_UnloadGainData

The function is unload temp gain data.

ACQUIRE_HEADER_API INT Correction_UnloadGainData(
HADNDLE hAdapter
);

Description of parameters:

- hAdapter: The network card object.

6.2.45 Correction_SaveGainFile

The function is generate the template file for gain correction. First, user must set do offset correct, set **Correction_SetDoOffset()** is true. At the end, according to the callback function **Correction_SetCorrectCallback**, whether the template file is created will be known. If the return value of **Correction_SetCorrectCallback** is true, then the template file is generated successful. Or else is failed.

ACQUIRE_HEADER_API INT Correction_SaveGainFile(
HADNDLE hAdapter
);

Description of parameters:

- hAdapter: The network card object.

6.2.46 Acquisition_GetDarkFrames2

The function is get five frames of original dark image. The default value is 5.

```
ACQUIRE_HEADER_API INT Acquisition_GetDarkFrames2(  
HANDLE hAdapter,  
WORD wFrames  
);
```

Description of parameters:

hAdapter: The network card object.

wFrames: The number of acquisition image.

6.2.47 Acquisition_GetLightFrames

The function is get five frames of original light image.

```
ACQUIRE_HEADER_API INT Acquisition_GetLightFrames(  
HADNDLE hAdapter,  
WORD wFrames  
);
```

Description of parameters:

hAdapter: The network card object.

wFrames: The number of acquisition image.

6.2.48 Correction_IsCreateLightFile

The function is create a original light image or not.

```
ACQUIRE_HEADER_API INT Correction_IsCreateLightFile (  
HADNDLE hAdapter,  
BOOL bIsCreateFile  
);
```

Description of parameters:

hAdapter: The network card object.

bIsCreateFile: true: do create light file.

false: do not do create light file.

6.2.49 Correction_GreateDefectFile

The function is create a defect pixel image.

```
ACQUIRE_HEADER_API INT Correction_CreateDefectFile (  
HADNDLE hAdapter,  
WORD wMode  
);
```

Description of parameters:

hAdapter: The network card object.

wMode: No use.

6.2.50 Correction_SetDoOffset2

The function is to do offset correction on acquisition image. It is “PRE Offset” calibration.

```
ACQUIRE_HEADER_API void Correction_SetDoOffset2(  
HADNDLE hAdapter,  
BOOL bDoOffset  
);
```

Description of parameters:

hAdapter: The network card object.

bDoOffset: true: do offset correction.

false: do not do offset correction.

6.2.51 Correction_SetAutoOffset

The function is to do auto post of offset correction. It is “POST Offset” calibration.

```
ACQUIRE_HEADER_API INT Correction_SetAutoOffset(  
HADNDLE hAdapter,  
BOOL bAutoOffset  
);
```

Description of parameters:

hAdapter: The network card object.

bAutoOffset: true: do auto post offset.

false: do not do auto post offset.

6.2.52 Correction_SetDoGain

The function is to do gain correction on acquisition image.

```
ACQUIRE_HEADER_API void Correction_SetDoGain(  
HADNDLE hAdapter,  
BOOL bDoGain  
);
```

Description of parameters:

hAdapter: The network card object.

bDoGain: true: do gain correction.

false: do not do gain correction.

6.2.53 Correction_SetDoDefect

The function is to do defect correction on acquisition image.

```
ACQUIRE_HEADER_API void Correction_SetDoDefect(  
HADNDLE hAdapter,  
BOOL bDoDefect  
);
```

Description of parameters:

hAdapter: The network card object.

bDoDefect: true: do defect correction.

false: do not do defect correction.

6.2.54 Correction_GetDoOffsetStatus

The function is get status to do offset correction.

```
ACQUIRE_HEADER_API void Correction_GetDoOffsetStatus(  
HADNDLE hAdapter,  
);
```

Description of parameters:

hAdapter: The network card object.

6.2.55 Correction_GetDoGainStatus

The function is get status to do gain correction.

```
ACQUIRE_HEADER_API void Correction_GetDoGainStatus(  
HADNDLE hAdapter,  
);
```

Description of parameters:

hAdapter: The network card object.

6.2.56 Correction_GetDoDefectStatus

The function is get status to do defect correction.

```
ACQUIRE_HEADER_API void Correction_GetDoDefectStatus(  
HANDLE hAdapter,  
);
```

Description of parameters:

hAdapter: The network card object.

6.2.57 Acquisition_QueryTemperature

The function is temperature command.

```
ACQUIRE_HEADER_API void Acquisition_QueryTemperature (  
HANDLE hAdapter  
);
```

Description of parameters:

hAdapter: The network card object.

6.2.58 Acquisition_QueryHumidity

The function is humidity command.

```
ACQUIRE_HEADER_API void Acquisition_QueryHumidity (  
HANDLE hAdapter  
);
```

Description of parameters:

hAdapter: The network card object.

6.2.59 Acquisition_QueryReadVersion

The function is read version command.

```
ACQUIRE_HEADER_API void Acquisition_QueryReadVersion (  
HANDLE hAdapter  
);
```

Description of parameters:

hAdapter: The network card object.

6.2.60 Acquisition_GetTemperature

The function is get temperature value.

```
ACQUIRE_HEADER_API void Acquisition_GetTemperature (  
HANDLE hAdapter,  
float &fTemperature  
);
```

Description of parameters:

hAdapter: The network card object.

fTemperature: temperature value.

6.2.61 Acquisition_GetHumidity

The function is get humidity value.

```
ACQUIRE_HEADER_API void Acquisition_GetHumidity (  
HANDLE hAdapter,  
float &fHumidity  
);
```

Description of parameters:

hAdapter: The network card object.

fHumidity: humidity value.

6.2.62 Acquisition_GetReadVersion

The function is get read version number.

```
ACQUIRE_HEADER_API void Acquisition_GetReadVersion (  
HANDLE hAdapter,  
WORD &wV1,  
WORD &wV2,  
WORD &wV3,  
float &fReadVersion  
);
```

Description of parameters:

hAdapter: The network card object.

wV1: Version 1.

wV2: Version 2.

wV3: Version 3.

fReadVersion: no use.

6.3 Demo illustration

Example: How to acquisition one frame image data by Gigabit Internet interface?

1. Initializing

1) Initializing the network card and uart port.

```
Acquisition_Initialize("com1");
```

2) Set the settings of uart port and other parameters

```
Acquisition_SetCommDCB("baud=9600 parity=N data=8 stop=1");
```

//Get the list of NIC.

```
GIGE_ADAPTERNAMELIST* pList=Acquisition_GigeGetAdapterList();
```

//Create the object of NIC.

```
Acquisition_GigeCreateAdapterObject(pAdapterName,m_hGigeAdapter);
```

3). Return the connection information of NIC.

```
Acquisition_GigeAdapterIsConnected(PCHAR pAdapterName,BOOL  
&bConnect)
```

4). Set the callback function of image acquisition.

```
Acquisition_GigeAdapterObjectSetImageCallback(m_hGigeAdapter,pImage  
Callback,pUser);
```

7). Set the callback function of Uart.

```
Acquisition_SetComCallback(pStatusCallback, pUser);
```

2. Start acquisition the image

1). Acquisition the dark image.

```
Acquisition_StartAcquisition();
```

2). Acquisition the exposing image.

3. Unload

1). Unload the network card

```
Acquisition_GigeDeleteAdapterObject(m_hGigeAdapter);
```

2). Unload capture card and uart port

```
Acquisition_Close();
```

4. Acquisiton Mode

1). Set the trigger mode.

Acquisition_SetDRConfigAecMode(wMode);

2). Get the trigger mode.

Acquisition_GetDRConfigAecMode ();

3). Update the trigger mode.

Acquisition_DRConfigUpdateAll ();

Others, please reference the source code of iDemo.

iRay Tech.

7.Chapter VII Service Information

Product lifetime

The estimated product lifetime is up to 10 years under appropriate regular inspection and maintenance.

Regular inspection and maintenance

In order to ensure the safety of patients, operating personal and third parties, and to maintain the performance and reliability of the equipment, be sure to perform regular inspection at least once a year. If necessary, clean up the equipment, make adjustments, or replace consumables. There may be cases where overhaul is recommended depending on the conditions. Contact your sales representative or local iRay dealer for regular inspection or maintenance.

Repair

If a problem cannot be solved even taking the measures indicated in troubleshooting, contact your sales representative or local iRay dealer for repairs. Please refer to the name label and provide the following information:

Product Name: Venu-

Serial Number:

Description of Problem: In as much detail as possible.

Replacement parts support

Performance parts (parts required to maintain the functioning of the product) of this product will be stocked for 5 years after discontinuance of production, to allow for repair.

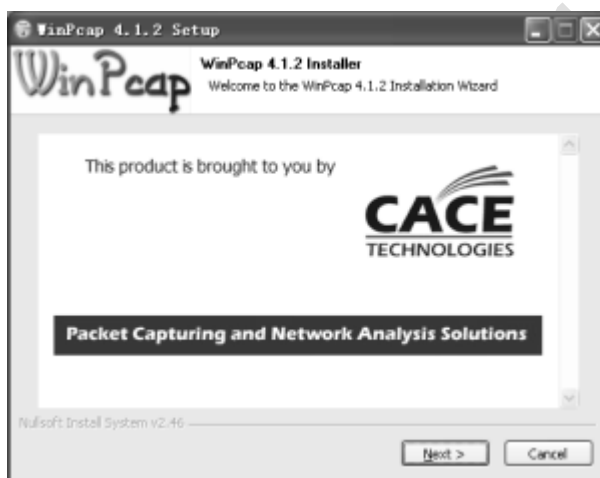
Replacement of fuses

Appendix A Installation of SDK

The detector provides two interfaces for image acquisition. For using, user must install the relative software rightly.

A.1 Installation of Gigabit Ethernet Driver

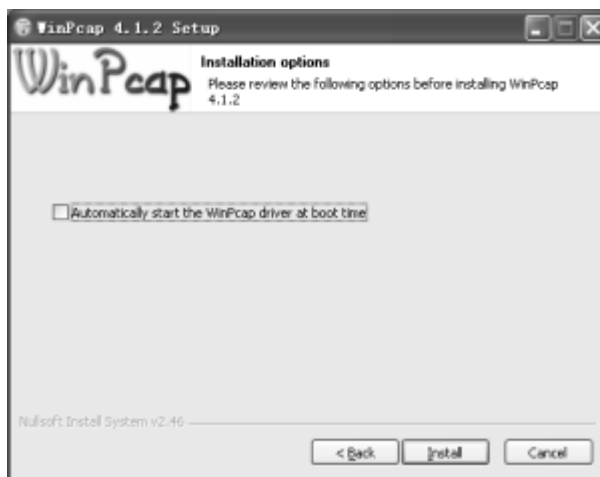
In order to use the Gigabit Ethernet interface for data transfer, the use need to install the driver files WinPcap 4.1.2, this has been included in the CD-ROM.



Click “next” button to start installation.



Click the “I Agree” button to confirm with the license agreement.



Do not select the “Automatically start the WinPcap driver at boot time” item. The function will be loaded by the image acquisition software.

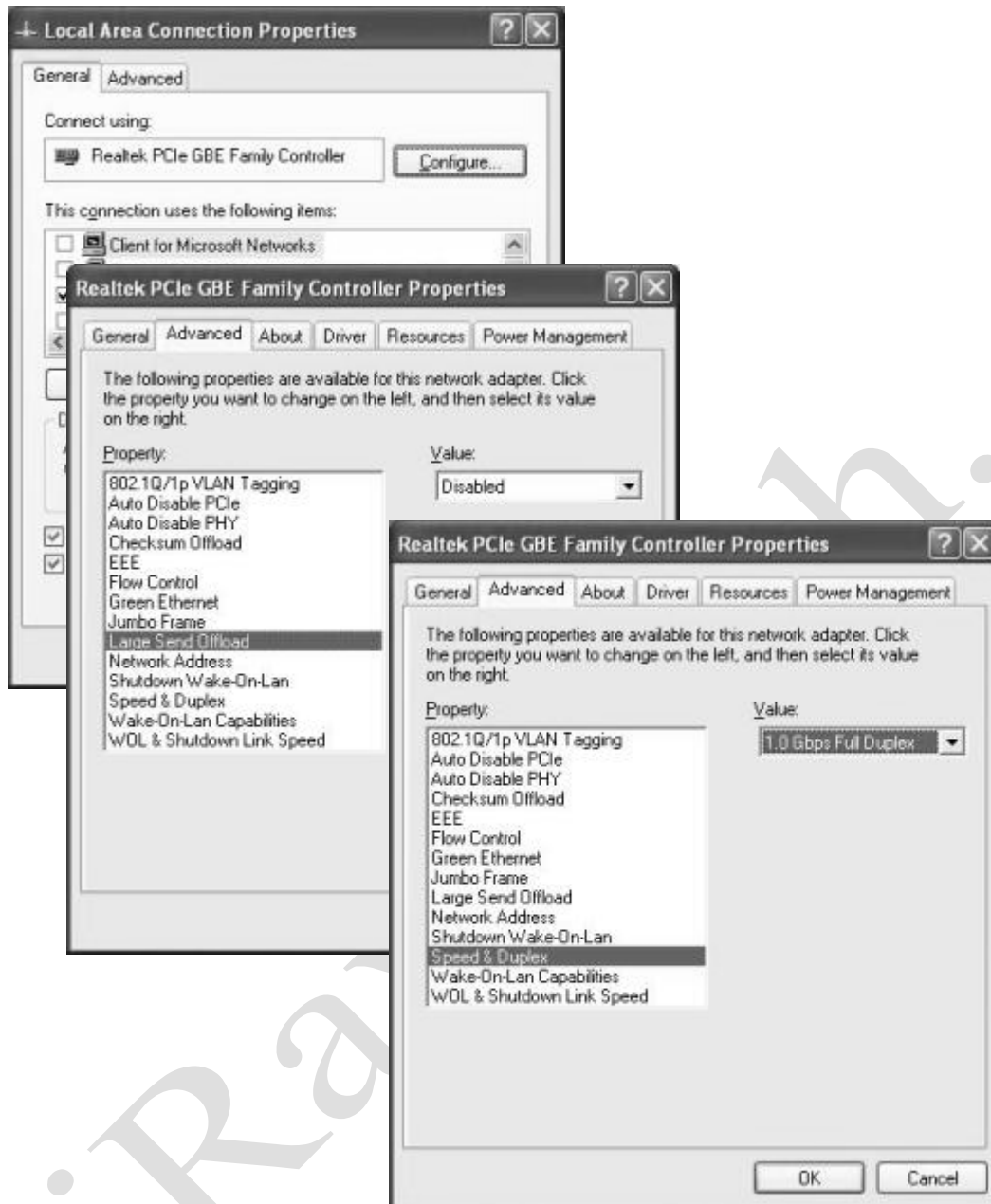


Then installation completed



When use one new computer, user must set the settings of network card for working normally.

As figure, click “Configure” button of Local Area Connection Properties, set the value of **Large Send Offload** as Disabled, and the value of **Speed & Duplex** as **1.0 Gbps Full Duplex**. Error settings may consult in abnormal of network connection.



Appendix B Information of Manufactures



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目录

VENU1717 0

USER’S MANUAL..... 0

TO CUSTOMERS 1

IMPORTANT INFORMATION ON USAGE AND MANAGEMENT OF EQUIPMENT 1

DISCLAIMER..... 1

ABOUT CE..... 3

VENU1717 IS ACCORDING TO THE STANDARD OF IEC 60601-1-1-2,
ELECTROMAGNETIC COMPATIBILITY –MEDICAL ELECTRICAL INSTRUMENT..... 3

THE DETECTOR CAN CONNECT TO PUBLIC MAINS AS DEFINED IN CISPR 11 (THE
CLASS DEFINES GROUP 1 CLASS B)..... 3

ACCORDING TO CE TESTING, THE TEST STANDARDS SEE THE CHAPTER V:
REGULATORY INFORMATION..... 3

IF YOU WANT TO KNOW MORE INFORMATION, PLEASE CONNECT TO THE
PRODUCT OR IRAY’S AUTHORIZED AGENT..... 3

NOTE ON INSTALLATION 3

NOTE ON DISPOSAL OF THIS PRODUCT..... 3

ABOUT SERVICE INFORMATION 3

SYMBOLS..... 4

THE LIST OF THE SYMBOLS USED IN THIS INSTRUMENT IS AS FOLLOWS: 4

SYMBOL FOR “CAUTION, CONSULT ACCOMPANYING DOCUMENTS”. 4

A. THIS SYMBOL SHALL BE ACCOMPANIED BY THE MANUFACTURER’S SERIAL
NUMBER. THE SERIAL NUMBER SHALL BE AFTER OR BELOW THE SYMBOL,
ADJACENT TO IT..... 4

B. THE RELATIVE SIZE OF THE SYMBOL AND THE SERIAL NUMBER ARE NOT
SPECIFIED. 4

C. SO FAR OUR PRODUCT SERIAL NUMBER IS MADE OF SEVEN DIGITS, TWO DIGITS
FOR THE YEAR AND TWO DIGITS FOR THE MONTH AND THREE DIGITS FOR
SEQUENCE NUMBER. SO THE SERIAL NUMBER COULD BE SHOW THE DATE OF
MADE..... 4

A. THE SYMBOL SHALL BE ACCOMPANIED BY THE NAME AND THE ADDRESS OF
THE MANUFACTURER, ADJACENT TO THE SYMBOL. THE ADDRESS IS NOT
REQUIRED WITH THE SYMBOL ON AN IMMEDIATE CONTAINER AS SPECIFIED IN

EN375 AND EN376, EXCEPT WHEN THE IMMEDIATE CONTAINER IS ALSO THE OUTER CONTAINER.	5
B. THE RELATIVE SIZE OF THE SYMBOL AND THE NAME AND ADDRESS IS NOT SPECIFIED.	5
A. THE SYMBOL SHALL BE ACCOMPANIED BY THE NAME AND THE ADDRESS OF THE AUTHORIZED REPRESENTATIVE IN THE EUROPEAN COMMUNITY, ADJACENT TO THE SYMBOL. THE ADDRESS IS NOT REQUIRED WITH THE SYMBOL ON AN IMMEDIATE CONTAINER AS SPECIFIED IN EN375 AND EN376, EXCEPT WHEN THE IMMEDIATE CONTAINER IS ALSO THE OUTER CONTAINER.	5
B. THE RELATIVE SIZE OF THE SYMBOL AND THE NAME AND ADDRESS IS NOT SPECIFIED.	5
SYMBOL FOR “CONSULT INSTRUCTIONS FOR USE”, “CONSULT OPERATING INSTRUCTIONS”	5
EQUIPOTENTIALITY, TO IDENTIFY THE TERMINALS WHICH, WHEN CONNECTED TOGETHER, BRING THE VARIOUS PARTS OF AN EQUIPMENT OR OF A SYSTEM TO THE SAME POTENTIAL. NOT NECESSARILY BEING THE EARTH (GROUND) POTENTIAL. E.G. FOR LOCAL BONDING	5
TYPE B APPLIED PART, APPLIED PART COMPLYING WITH THE SPECIFIED REQUIREMENTS OF EN IEC60601-1 TO PROVIDE PROTECTION AGAINST ELECTRIC SHOCK, PARTICULARLY REGARDING ALLOWABLE PATIENT LEAKAGE CURRENT AND PATIENT AUXILIARY CURRENT.	5
“ON” (POWER)	5
“OFF” (POWER)	5
PROTECTIVE EARTH CONDUCTOR (GROUND)	5
TRADEMARKS	6
COPYRIGHT	6
CONTENTS	7
SAFETY NOTICES	9
1. CHAPTER I SAFETY INFORMATION	10
1.1 SAFETY PRECAUTIONS	10
1.2 NOTES FOR USING THE EQUIPMENT	15
BEFORE EXPOSURE	15
DURING EXPOSURE	15
CLEANING	15
2. CHAPTER II GENERAL DESCRIPTION	16
2.1 SCOPE	16
2.2 MODEL	17

2.3 CHARACTERISTIC.....	18
2.4 INTENDED USE	18
2.5 STANDARD CONFIGURATION	18
2.6 MAIN SPECIFICATIONS	19
2.7 CLASSIFICATION OF THE EQUIPMENT	21
3.CHAPTER III INSTALLATION AND OPERATION	22
3.1 QUICK START	22
3.2 FIRST IMAGE ACQUISITION	22
3.3 GAIN CORRECTION	25
3.4 DEFECT CALIBRATION.....	27
3.5 ACQUIRE CALIBRATED IMAGE	27
4. CHAPTER IV CONTROL INTERFACE.....	28
4.1 AC INPUT	28
4.2 SERIAL PORT	28
4.3 GIGABIT ETHERNET PORT	29
4.4 HVG INTERFACE.....	29
4.5 T-AEC MODULE	30
4.6 X-RAY IMAGE ACQUISITION	30
4.7 EVENT	36
5.CHAPTER V REGULATORY INFORMATION	38
5.1 MEDICAL EQUIPMENT SAFETY STANDARDS.....	38
5.2 GUIDANCE AND MANUFACTURE’S DECLARATION FOR EMC.....	39
6.CHAPTER VI IMAGING SOFTWARE SDK.....	44
6.1DESCRIPTION OF LIBRARY (IRAYACQUIRELIB.LIB)	44
6.2 DESCRIPTION OF FUNCTION:	49
6.3 DEMO ILLUSTRATION	70
7.CHAPTER VII SERVICE INFORMATION	72
PRODUCT LIFETIME.....	72
REGULAR INSPECTION AND MAINTENANCE.....	72
REPAIR	72
REPLACEMENT PARTS SUPPORT	72
APPENDIX A INSTALLATION OF SDK.....	73
APPENDIX B INFORMATION OF MANUFACTURES.....	76