







Revision History

Revision	Date	Descriptions
1.0	2012-06-08	Initial Release



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Safety and Regulatory

Safety Notice

The following safety notices are used to emphasize certain safety instructions. Follow the safety instructions in this manual along with warnings and cautions symbols. Ignoring such warnings or cautions while handling the product may results in serious injury or accident. It is important for you to read and understand the contents of this manual before attempting to use the product.

Symbols Descriptions	
WARNING	Indicates a potentially hazardous situation which will cause death, severe personal injury or substantial property damage if the instructions are ignored.
CAUTION	Indicates a potentially hazardous situation which may cause minor personal injury or property damage if the instructions are ignored.
i	Provides additional information that is helpful to you. It may emphasize certain information regarding special tools or items to check before operating the product.



Safety Information

This product is designed and manufactured to ensure maximum safety of operation and to meet all the safety requirements applicable to electronic medical equipment. However, anyone attempting to operate the system must be fully aware of potential safety hazards. It should be operated and maintained in strict compliance with the following safety precautions and operating instruments contained herein:

CAUTION	Caution : Federal law restricts this device to sale by or on the order of a physician or a licensed practitioner.
WARNING	Always be alert when operating this device. If a malfunction occurs, do not use this device until qualified personnel correct the problems.
WARNING	The product should be installed, maintained and serviced according to Vieworks maintenance procedures and by Vieworks personnel or other qualified maintenance personnel approved in writing by Vieworks. Operation and maintenance should be done in strict compliance with the operation instructions contained in the manuals.
WARNING	The system, in whole or in part, cannot be modified in any way without written approval from Vieworks.
CAUTION	Before authorizing any person to operate the system, verify that the person has read and fully understand the Service Manual. The owner should make certain that only properly trained and fully qualified personnel are authorized to operate the equipment. An authorized operators list should be maintained.
WARNING	Prevent unauthorized personnel from access to the system.
CAUTION	It is important that this Service Manual be kept at hand, studied carefully and reviewed periodically by the authorized operators.
CAUTION	The owner should ensure continuous power supply to the system, with voltage and current according to the product specifications. If power failures are frequent, an Uninterrupted Power Supply (UPS) should be installed to avoid loss of data.
CAUTION	If the product does not operate properly or if it fails to respond to the controls described in this manual, the operator should immediately contact Vieworks field service representative.
CAUTION	User must not contact a fuse holder or contacts of connector (ex: Inlet connector) with a patient simultaneously during operating the equipment and not allow patient to touch the fuse holder or contacts of connector.



CAUTION	The images and calculations provided by this system are intended to be used as tools for the competent user. They are explicitly not to be regarded as a sole incontrovertible basis for clinical diagnosis. Users are encouraged to study the literature and reach their own professional conclusions regarding the clinical utility of the system.	
CAUTION	The user should be aware of the product specifications and of the system's accuracy and stability limitations. These limitations must be considered before making any decision based on quantitative values, in case of doubt, please consult a Vieworks representative.	
CAUTION	 Do not install the equipment in a location with the conditions listed below. Otherwise, it may result in failure or malfunction, fall or cause fire or injury. Close to facilities where water is used. Locations exposed to direct sunlight. Close to air-conditioner or ventilation equipment. Close to heat source such as a heater. Prone to vibration. Insecure place. Dusty environment. Saline or sulfurous environment. High humidity. Ambient temperature is higher than the operating temperature stated in this Service Manual. 	
CAUTION	Occasionally, this product may have defect pixels caused by TFT characteristics. When the defect pixels are found, perform the Defect detection. For details about how to correct defect pixels, refer to <u>5.4.3 Defect Correction</u> .	
CAUTION	Do not inflict excessive shock and mechanical vibration. Otherwise, it may result in poor image quality caused by noise.	
CAUTION	Do not unscrew or loosen the screws on the detector surface since all the screws are secured properly at the time of shipment. Otherwise, it may result in poor image quality or damage to equipment.	
CAUTION	This product may malfunction due to electromagnetic interference (EMI) caused by telecommunication devices, transceivers, electronic devices, etc. To prevent the electromagnetic wave from badly influencing the product, be sure to avoid placing it in close proximity to the product. Or, change direction or position of the product or move into the shielded place to reduce electromagnetic interference.	
CAUTION	To reduce the risk of electric shock, do not remove cover. No user-serviceable part inside. Refer servicing to qualified service personnel.	



Battery Pack and Battery Charger Safety Information

Before using the battery pack and battery charger dedicated to ViVIX-S Wireless, read all applicable warnings and cautions.

Not following these instructions could result in electrical shock, fire, explosion or other conditions which may cause death, injury or property damages.

WARNING	Do not use the battery pack as a power source for equipment other than ViVIX-S Wireless detectors. Be sure to use only the dedicated battery pack for the ViVIX-S Wireless detector.
WARNING	The battery charger is designed for the dedicated battery pack. Do not use the battery charger other than the dedicated one. Otherwise, a battery explosion or a battery leak may occur, resulting in fire or electrical shock.
WARNING	Do not operate the battery charger using any type of power supply other than the one indicated on the rating label.
WARNING	Do not handle the product with wet hands.
WARNING	Do not place heavy objects 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.
WARNING	Do not attempt to disassemble, alter, or apply heat to the product.
WARNING	Avoid dropping or subjecting the product to severe impacts. To avoid the risk of injury, do not touch the internal parts of the battery if it has been cracked or otherwise damaged.
WARNING	Stop using the battery pack immediately if it emits smoke, a strange smell, or otherwise behaves abnormally.
WARNING	Do not let the battery pack and battery charger come into contact with water or other liquids and do not allow them to get wet.
WARNING	Do not clean with substances containing organic solvents such as alcohol, benzene, thinner, or other chemicals. Otherwise, fire or electrical shock may result.



WARNING	Do not allow dirt or metal objects (such as hair pins, clips, staples or keys) to contact the terminals. Otherwise, battery explosion or leakage of electrolyte may occur, resulting in fire, injury or pollution of surrounding area. If the battery leaks and the electrolytes come into contact with your eyes, mouth, skin or clothing, immediately wash it away with running water and seek medical attention.
CAUTION	Do not leave, store, or place the product in a location near heat sources, or in a place subject to direct sunlight, high temperature, high humidity, excessive dust, or mechanical shock. Otherwise, battery leakage, overheating or damage to the product may occur, resulting in electrical shock, burns, injury or fire.
CAUTION	Do not attempt to use a battery pack that has deteriorated. Using a battery pack that has exceeded its life cycle may lead to overheating, fire or explosion.
CAUTION	 The Lithium ion/polymer battery is recyclable. Battery slowly discharges even if not in use. The battery pack may have expired if it discharges immediately after being fully charged. You can purchase an optional battery pack to replace an exhausted one. The battery pack is a consumable item. If a fully charged battery is consumed quickly, use a new and fully charged battery pack.
CAUTION	Be sure to charge the battery periodically (once a year) if it is not used for an extended period of time. The battery pack cannot be charged if it has been over discharged.
CAUTION	Before discarding the battery pack, cover the terminals with adhesive tape or other insulators. Contact with other metal materials may cause fire or explosion.

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General Hazards

Radiation Hazards

This system can be connected to x-ray generating equipment. Be certain to follow the safety instructions and specifications for wearing proper lead apron when x-ray exposures are planned or possible. All personnel should wear protective equipment including dosimeters during all phases of installation, operation and maintenance of the system.

Electric Shock Hazards

To reduce the electric shock hazard, the system must be connected to an electrical ground. A three conductor AC power cable is supplied with this system to provide the proper electrical grounding. The power cable must be plugged into an UL-approved three-contact electrical outlet.

Do not disassemble or modify the product as it may result in fire or electric shock. There are no operator serviceable parts or adjustments inside the systems. Only trained and qualified personnel should be permitted access to the internal parts of the system.

Explosion Hazards

Do not operate the equipment in the presence of flammable or explosive liquids, vapors or gases. Do not plug in or turn on the system where hazardous substances are detected.

If flammable substances are detected after the system has been turned on, do not attempt to turn off the system or unplug it. Evacuate and ventilate the area before turning the system off.

Implosion Hazards

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 it being repaired.

Owner's Responsibility

The owner is responsible for ensuring that anyone using the system reads and understands the Service Manual and other relevant literature, and fully understands them. Vieworks makes no representation, however, that the act of reading this manual renders the reader qualified to operate, test and calibrate the system.



Do not use the system if unsafe conditions are known to exist. In case of hardware failure that could cause hazardous conditions (smoke, fire and etc), turn the power OFF and unplug the power cords of all sub-systems.



Notes for Using the Equipment

System Diagnostic

The *VXSetup* software runs a system diagnostic. Run *VXSetup* software after installing the system and at least once a year. If an error occurs, report the detailed error information to Vieworks local dealer or distributor.



The owner is responsible for ensuring that the system diagnostic is performed every year. Do not try to use the system if the system diagnostic is failed.

Calibration

To ensure optimal performance of the system, it is important to verify that the system is calibrated.



The owner is responsible for ensuring that the system calibration is performed after the system installation is completed or the system is repaired. Do not try to use the system if system calibration is not performed.

Distances measurements

Distances measurements in millimeters are possible only after distance calibration has been performed using a reference object (refer to VXvue User Manual).



The operator is responsible for performing distance calibration with a reference object and verifying the results of the distance calibration before taking any distance measurements on an image.

Left/Right Marker

The operator is responsible for the correct and clear marking on the left or right side of the image to eliminate possible errors.

The software includes an option to mark the image with L (left) or R (right) indicator from acquisition phase through printing and archiving. If the operator chose, for any reason, not to use L/R markers, he must use an alternative way to eliminate any possible mistake.



Image Backup

To avoid missing images which might result in patient being exposed to additional doses of radiation, it is important to backup the images by filming or by using a CD or DVD option. This should be done as a routine operation for every patient.

If the hard disk of your workstation is about to full, the operator should backup images and delete the images to make room on the hard disk for new patient.

User Limitations

The VXvue software has the technician mode which could only be operated with the inputting PASSWORD. The technician mode should be operated by the personnel who are qualified by Vieworks.

Cleaning the System

Use a dry cloth to clean surfaces of the system. Do not use detergents or organic solvents to clean the system. Strong detergent, and organic cleaners may damage the finish and cause structural weakening. Do not clean the system with turning the power on.

Disposal

Disposal of this product in an unlawful manner may have negative effects 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.



The expected life span of ViVIX-S Wireless system is about 3 years.

Overheating

Do not block the ventilation ports of the detector to prevent overheating of the detector. Overheating can cause system malfunction and damages.

Electrical fire

- This equipment is not suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide.
- Conductive fluids that drain into the active circuit components of the system may cause short circuits that can result in electrical fire. Therefore, do not place fluids or food on any part of the system.
- To avoid electric shocks and burns caused by use of the wrong type of fire extinguisher, make sure that the fire extinguisher at the site has been approved for use on electrical fires.



Handling the Equipment

The Equipment must be handled with care to avoid personal injury damage to the internal image sensor.

	•	Do not put pressure on the detector locally since it will cause permanent damage to
\wedge		the internal image sensor.
	•	Excessive weight on the equipment may damage the internal image sensor.
CAUTION	•	It is recommended to use the case, in case if a patient should be positioned to put
		pressure on the detector while acquiring images.

Load Limit	Specifications	
Uniform Load	150 kg over the whole area of the detector surface	
Local Load	100 kg on an area 40 mm in diameter	

Pediatric Application

- Every request should be reviewed by the pediatric radiologist prior to beginning the examination to insure correct study is being performed.
- If the technologist notices an unusual request, they should contact the pediatric radiologist. An example should be from pediatric clinic where they order a Full Cervical, Thoracic, and Lumbar Spine series. The pediatric radiologist should contact ordering physician and decide which study is the best for this pediatric patient.
- The technologist should use the proper technique for the patient's size to decrease the radiation dose when the technologist acquires diagnostic images.
- ALL Pediatric patients shall be shielded for their x-ray examinations, except for when the shield will
 obscure the region of interest, as in a pelvic or SI joint xray for trauma or arthritis, or when it is physically
 or clinically unreasonable to shield the patient. For routine Hip X-Rays, ALL male children shall have
 their scrotum shielded using the small gonadal shield, females may not be shielded as this would
 obscure the hips.
- To minimize motion in infants and young children, swaddle the infant. Use distraction tools to improve cooperation and projectors with child-friendly themes, music, toys with flashing lights or music, child-friendly images on the ceiling or walls, singing, counting, and a parent reading and talking to the child through the console all can help reduce anxiety and comfort the child.
- A Scoliosis series will consist of a single frontal standing view of the spine. No lateral view or supine view is needed, unless specifically asked for by the Orthopedist or Radiologist. If the female's breasts can be shielded without obscuring the spine, breast shields should be used.



Regulatory

Medical Equipment Classifications

Type of protection against electrical shock	Class I equipment
Degree of protection against ingress of water	IPXO
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.

Equipment Standards

IEC/EN/UL 60601-1	Medical electrical equipment
CSA C22.2 No. 601.1	Part 1: General requirements for safety
IEC/EN 60601-1-2	Medical electrical equipment Part 2: Electromagnetic compatibility-requirements and tests
IEEE 802.11a/b/g/n	Wireless Communications



Guidance and Manufacturer's Declaration for EMC Directive

This device has been tested for EMI/EMC compliance, but interference can still occur in an electromagnetically noisy location. Attempt to maintain a suitable distance between electrical devices to prevent malfunction.

Electromagnetic Emissions

The Equipment Under Test (EUT) is intended for use in the electromagnetic environment specified below. The customer or user of the EUT should assure that it is used in such an environment.

Immunity Test	Compliance	Electromagnetic Environment – Guidance
RF Emissions	Group 1	The EUT uses RF energy only for its internal function. Therefore, its
CISPR 11		RF emissions are very low and are not likely to cause any
		interference in nearby electronic equipment.
RF Emissions	Class A	The EUT is suitable for use in all establishments other than
CISPR 11		domestic and those directly connected to the public low-voltage
Harmonic emissions	Class A	power supply network that supplies buildings used for domestic
IEC 61000-3-2		purposes.
Voltage fluctuations/	Complies	
Flicker emissions		
IEC 61000-3-3		



Electromagnetic Immunity

The EUT is intended for use in the electromagnetic environment specified below.

The customer or user of the EUT should assure that it is used in such an environment.

Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment – Guidance
Electrostatic	±6 kV	±6 kV	Floors should be wood, concrete or ceramic tile. If
discharge (ESD)	contact	contact	floors are covered with synthetic material, the relative
IEC 61000-4-2	±8 kV air	±8 kV air	humidity should be at least 30%.
Electrical fast	±2 kV for	±2 kV for	Mains power quality should be that of a typical
transient/burst	power supply lines	power supply lines	commercial or hospital environment.
IEC 61000-4-4	± 1 kV for input/output lines	± 1 kV for input/output lines	
Surge	±1 kV differential	±1 kV differential	Mains power quality should be that of a typical
IEC 61000-4-5	mode	mode	commercial or hospital environment.
	±2 kV common mode	±2 kV common mode	
Voltage dips, short	<5% UT	<5% UT	Mains power quality should be that of a typical
interruptions and	(>95% dip in Uт) for 0.5	(>95% dip in Uт) for 0.5	commercial or hospital environment. If the user of the
voltage variations	cycle.	cycle.	EUT image intensifier requires continued operation
on power supply	40% Uт (60% dip in	40% Uт (60% dip in	during power mains interruptions, it is recommended
input lines	Ūτ) for 5	Úт) for 5	that the EUT image intensifier be powered from an
IEC 61000-4-11	cycles.	cycles.	uninterruptible power supply or a battery.
	70% Uτ (30% dip in Uτ) for 25 cycles.	70% Uτ (30% dip in Uτ) for 25 cycles.	
	<5% Uт (<95% dip in Uт) for 5 sec.	<5% Uт (<95% dip in Uт) for 5 sec.	
Power frequency	3 A/m	3 A/m	Power frequency magnetic fields should be at levels
(50/60 Hz)			characteristic of a typical location in a typical
magnetic field			commercial or hospital environment.
IEC 61000-4-8			

NOTE: $U\tau$ is the a.c. mains voltage prior to application of the test level.



Immunity Test	IEC 60601 Test Level	Compliance Level	Electromagnetic Environment – Guidance
Conducted RF	3 Vrms 150 kHz to 80 MHz	3 Vrms 150 kHz to 80 MHz	Portable and mobile RF communications equipment
IEC 61000-4-6			should be used no closer to any part of the EUT,
			including cables, than the recommended separation
			distance calculated from the equation applicable to the
Radiated RF	3 V/m 80 MHz	3 V/m 80 MHz	frequency of the transmitter.
IEC 61000-4-3	to 2.5 GHz	to 2.5 GHz	Recommended separation distance $d = [\frac{3.5}{V_1}]\sqrt{P}$ ratio
			$d = \left[\frac{3.5}{V_1}\right] \sqrt{P} 80 \text{ MHz to 800 MHz}$ $d = \left[\frac{7}{E_1}\right] \sqrt{P} 80 \text{ MHz to 800 MHz}$
			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 meters (m). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey ^a , should be less than the compliance level in each frequency range. ^b Interference may occur in the vicinity of equipment marked with the following symbol:

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.

^b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than $[V_1]$ V/m.

^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 EUT is used exceeds the applicable RF compliance level above, the EUT should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the EUT.



VIVIX-S Wireless Service Manual

Label and Symbols

Detectors

FXRD-1417WA Vieworks CE 0434 Digital Imaging Systems ViVIX-S Part No.: FXRD-1417WA Flat Panel Detector VP09P112001 Rating: 4,000mAh / 24V---Max. 0.5A hun 2012.03 Date of manufacture: March UL 60601-1/CAN/CAS US C22.2 No. 601.1 Caution: Federal law restricts this device to sale by or on the order of a physician or a licensed practitioner. CAUTION: To reduce the risk of electric shock, do not remove cover. No user-serviceable part inside. Refer servicing to qualified service personnel. Manufacturer: Vieworks Co., Ltd. #107-108, 801-810 Suntechnity II, 52, Sagimakgol-ro, Jungwon-gu, Seongnam-si, Gyeonggi-do, 462-808 MADE IN KOREA South Korea



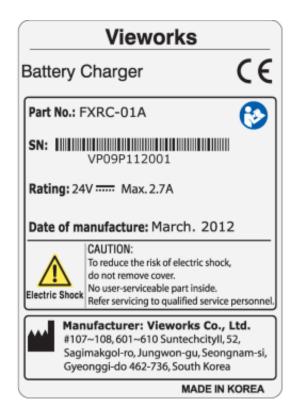




System Control Unit



Battery Charger







Symbols

Symbol	Description
	Direct Current
\sim	Alternating Current
	Protective Earth (Ground)
₽	Equipotentiality
0	Power Off
\land	Attention, consult accompanying documents
	Power On
ASSIFIA	Medical Equipment
Ĩ.	With Respect to electric shock, fire, and mechanical hazards only
	In accordance with UL60601-1 and CAN/CSA C22.2 No. 601.1.
C E 0434	This mark shows compliance of the equipment with Directive 93/42/EEC.
	Read and understand all instructions and warning labels in the product
R \$\$	documentation before using the equipment.
	Keep manual for future reference.



1. Overview

The *ViVIX-S Wireless* is advanced wireless flat panel X-ray imaging system designed for digital radiography. The lightweight wireless digital radiography is designed to be compatible with conventional X-ray film cassettes so that the users who are not familiar with Digital Radiography (DR) can easily understand and use the *ViVIX-S* system. In addition, the wireless communication (IEEE 802.11a/b/g/n) feature improves the operability and high-speed processing.

1.1 Features

- Wireless LAN communication (IEEE 802.11a/b/g/n) feature
- Supporting Conventional 35 \times 43 X-ray film cassette
- Compatible with not only new X-ray generators based on DR interface but also conventional X-ray generators
- Designed with simple wiring and lightweight for portable applications
- Image digitization, image inversion, image processing, zooming, panning, window level adjustment, contrast adjustment, and various features enable the operator to see diagnostic details that is difficult to see by using conventional non-digital techniques.
- Depending on the operating environment, the Ether Con Cable (optional) enables the device to be used through expansion to a wired connection.

1.2 Intended Use

The *ViVIX-S* Digital X-ray detector is indicated for digital imaging solution designed for providing general radiographic diagnosis of human anatomy. This device is intended to replace film or screen based radiographic systems in all general purpose diagnostic procedures. This device is not intended for mammography applications.



1.3 Standard Configuration

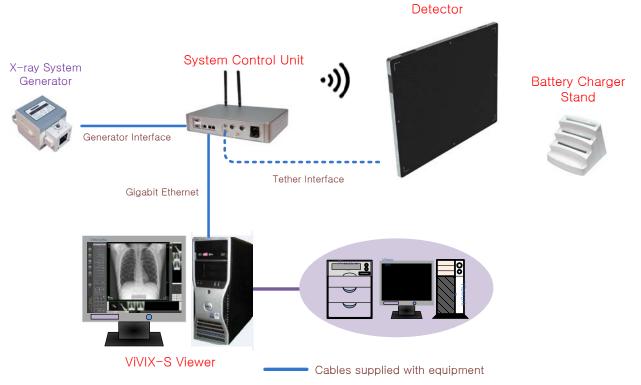


Figure 1.1 ViVIX-S Wireless System Configuration

Wireless communication is established between the ViVIX-S Wireless detector and System Control Unit. The ViVIX-S system is compliant with IEEE 802.11a/b/g/n (2.4 GHz / 5 GHz). The available frequency band may vary depending on local radio laws and system requirements. Consult your local dealer for the frequency available in your area.

i	Use of multiple WLAN devices within the same frequency band may interfere with each wireless communication and cause a decline in transmission speed.
i	Do not cover or block the wireless module of the detector. Otherwise, the transmission speed or operable distance may be reduced.
i	Recommended maximum operating distance of wireless communication between the detector and System Control Unit is 8 meters.



2. Product Description

ViVIX-S Wireless system consists of detector, system control unit (SCU), battery charger, battery pack, software and its accessories.

2.1 Product Components

Detector

- FXRD-1417WA (scintillator: CsI (TI))
- FXRD-1417WB (scintillator: Gadox)

System Control Unit (SCU)

• FXRS-03A

Battery Charger and Battery Pack

- FXRC-01A
- FXRB-01A

Software

- Viewer: VXvue
- Calibration and Diagnostic: VXSetup





Accessories (Cables)

- AC Power Cable (2M)
- Generator Interface Cable (15M)
- Direct LAN Cable 15M (1000BASE-T)
- Tether Interface Cable (3M)

The use of accessories and cables other than those specified, with the exception of *ViVIX-S Wireless* accessories and cables sold by Vieworks Co., LTD. as replacement parts for internal components, may result in increased emissions or decreased immunity of the equipment.



Accessory equipment connected to the analog and digital interfaces must be certified according to the respective IEC standards. All combinations of equipment must be in compliance with IEC 60601-1-1 system requirements. Any person who connects additional equipment to the signal input or signal output ports configures a medical system, and is therefore responsible for ensuring that the system complies with the requirements of the system standard IEC 60601-1. If in doubt, consult Vieworks technical support representative.

Workstation (Recommended but NOT included)

•	Operating System	Microsoft Windows XP 32 bit SP3 (Professional Edition),
		Windows 7 32 bit SP1 (Professional Edition or higher) or
		Windows 7 64 bit SP1 (Professional Edition or higher)
•	CPU	Intel Core i5 2600 or higher (or equivalent AMD chips)
•	Memory	2 GB or higher
•	Hard Disk	1 TB or higher
•	Ethernet (NIC)	Intel® PRO 1000 Series (PT, CT, etc)
		Min. Requirements: 1Gbps, Jumbo Frames - 9K, Receive Descriptors - 2K
•	Monitor	1280 $ imes$ 800 or higher
•	CD-Rom	CD or DVD R/W or blu-ray



2.2 Detector

2.2.1 Detector Specifications

Item		Description
Model	FXRD-1417WA(B)	
Purpose	General radiography	
Image Matrix Size	2560 × 3072 pixels	
Pixel Pitch	140 <i>µ</i> m	
Effective Imaging Area	358 mm × 430 mm	
Grayscale	14 bit, 16,384 grayscale	9
Scintillator	CsI (Cesium lodide) or	Gadox (Gadolinium Oxysulfide)
Image Acquire and Transfer Time	Preview: 2 s, Image Pro	ocessing: 6.5 s (2 s when using Tether Interface)
Spatial Resolution	Min. 3.5 line pair/mm	
Rated Power Supply	DC +24 V, Max. 0.5 A	
• Wireless	Powered by the ba	ttery pack (4,000 mA h)
• Wired	Powered by the SC	CU using tether interface
Power Consumption	Max. 12 W	
Wireless Communications	IEEE 802.11a/b/g/n (2.4	4 GHz / 5 GHz)
[†] Tether Interface (Optional)	Gigabit Ethernet (1000	BASE-T) via [‡] PoE
Imaging Plate	Carbon Fiber Plate	
Cooling	Air cooling	
Dimensions ($H \times W \times D$)	384 mm × 460 mm × 15	mm
Weight	3.0 kg (including batter	ry pack)
Environmental Requirements		
Operation	Temperature:	+10 ∼ +35 ℃
	Humidity:	30 \sim 85% (Non-Condensing)
	Atmospheric pressure:	$70 \sim 106$ kPa
	Altitude:	Maximum 2000 meters
Storage and transportation	Temperature:	-15 ∼ +55 ℃
	Humidity:	10 \sim 90% (Non-Condensing)
	Atmospheric pressure:	$50~\sim~106~$ kPa
	Altitude:	Maximum 2000 meters
	Table 2.1 Detector Sn	

Table 2.1Detector Specifications

[†]Tether Interface: Allows the detector to communicate with SCU via Ethernet cabling when wireless communications is

not available or higher speed data transfer is necessary.

[‡]**PoE (Power over Ethernet)**: Delivers electrical power over LAN cabling to the networked device.



2.2.2 Detector Components

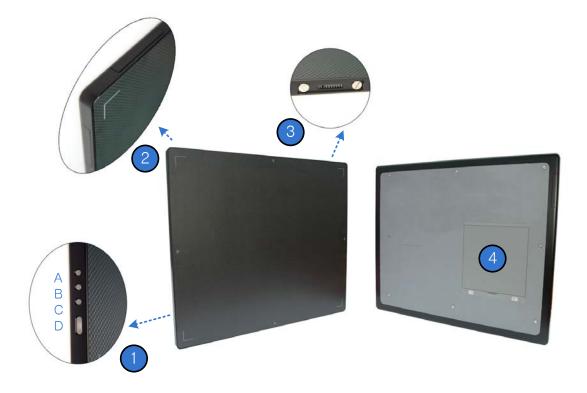


Figure 2.1 Detector Components

No.	Name	Description
1	Status Indicators	A: Data LED, Indicates communication and transmission status Blue
		B: Active LED, Indicates the detector is ready to work Orange
		C: Power LED, Indicates power on/off status Green
	Power button	D: Power button, Press to power on or off the detector.
2	Wireless Module	Transmits data with wireless communications (IEEE 802.11a/b/g/n).
3	Tether Interface	Allows the detector to communicate with SCU via PoE cabling (Gigabit Ethernet
		1000BASE-T)
4	Battery Pack	Supplies electrical power to the detector while communicating wirelessly.

 Table 2.2
 Detector Components Description



- 6-6

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2.2.3 Detector Dimension

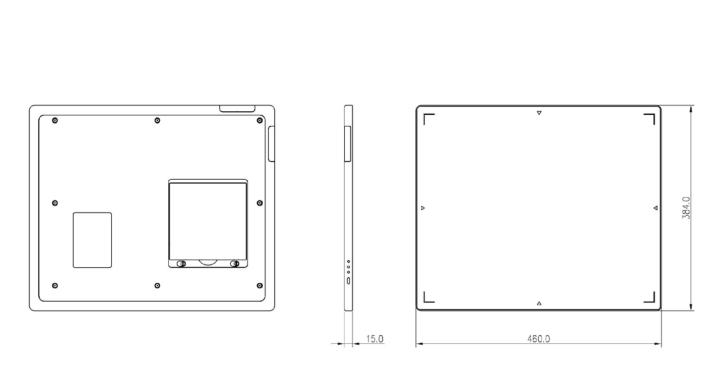


Figure 2.2 Detector Dimension



2.3 System Control Unit

2.3.1 System Control Unit Specifications

Item		Description
Model	FXRS-03A	
Power Supply	Input: AC100 to 240	V, 50/60 Hz, Max. 200VA
	Output: DC +24V 3.3/	A, 80W
Cabling Ports	Gigabit Ethernet Ports	– 3EA
	Power over Ethernet Po	orts – 2EA (Only for FXRD-1417)
Wireless Communications	IEEE 802.11a/b/g/n (2.4	4 GHz / 5 GHz)
Dimensions (W \times H \times D)	300 mm × 235.8 mm × 5	58 mm, Antenna Height – 105 mm
Weight	2.5 kg	
Environmental Requirements		
Operation	Temperature:	+10 ~ +35℃
	Humidity:	$30\sim85\%$ (Non-Condensing)
	Atmospheric pressure:	$70~\sim~106$ kPa
	Altitude:	Maximum 2000 meters
Storage and transportation	Altitude: Temperature:	Maximum 2000 meters -15 ~ +55℃
Storage and transportation		
Storage and transportation	Temperature:	-15 ~ +55℃ 10 ~ 90% (Non-Condensing)

 Table 2.3
 System Control Unit Specifications



2.3.2 System Control Unit Components



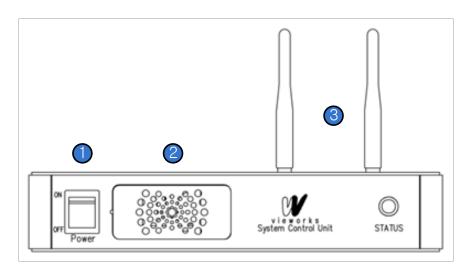


Figure 2.3 System Control Unit (Front)

No.	Name	Description
1	Power Switch	Turns on or off the SCU.
2	Fan	Expels heated air inside of the SCU.
3	Antenna	Assists communications between the detector and SCU.
4	Status LED	Indicates status of SCU operation and connection.
		Blinking Green: Startup in progress
		Blue: Connected to Wi-Fi network

 Table 2.4
 System Control Unit Components (Front)



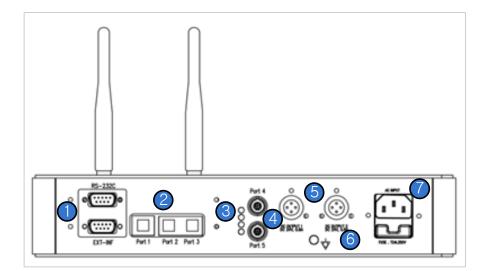


Figure 2.4 System Control Unit (Back)

connection to the X-ray generator. Gigabit Ethernet (1000BASE – T) communication
Gigabit Ethernet (1000BASE – T) communication
he workstation and SCU.
hernet (1000BASE – T) Port
communication between FXRD-1717 and SCU when
g multiple detectors.
hernet (1000BASE – T) Port
Port 4 and Port 5 status (Green: 1Gbps, Orange:
n interface to communicate with the detector and to
ectrical power to the detector (Only for FXRD-1417).
er Ethernet Port (1000BASE-T)
n interface to supply power to a FXRD-1717 detector.
+24V/24W (×2 ports)
connection to equipotential ground.
he power cable to the power socket.
V, 50/60 Hz, T2AL250V Fuse (2 EA)

Table 2.5 System Control Unit Components (Back)



P.E (Potential Equalization) of SCU is used to keep equipotential between SCU and an equipment to be used with ViVIX-S Wireless. To connect to P.E of equipment, use a ground cable.



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2.3.3 SCU Dimension

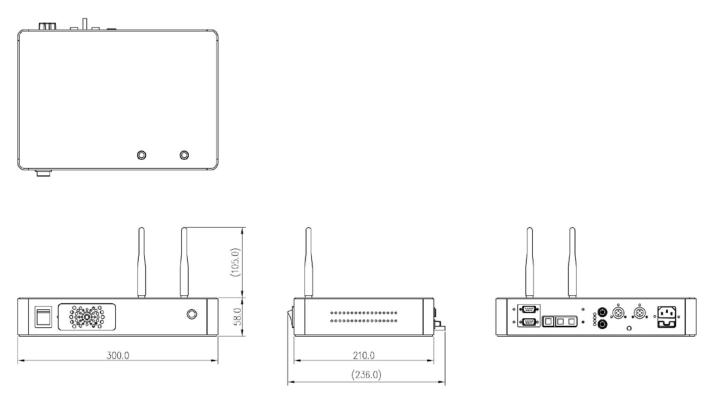


Figure 2.5 SCU Dimension



2.3.4 Fuse

Two fuses are installed inside of SCU to prevent electrical accidents due to an error such as overcurrent occurred in the AC Input. Stop immediately using SCU when fuses break.

Item	Description
Model	Littlefuse [®] 218002 (2 EA)
Туре	Time Lag Cartridge Fuse
Amp Rating	2 A
Voltage Rating	250 V

Replacing Fuses

WARNING	• Turn off SCU and its peripheral equipment, and pull the plug out of the power socket
	before replacing fuses.
	• When fuses break, resolve the cause of overcurrent first, and then replace the fuses
	with extra fuses (optional items, one set of two) or equivalent rating fuses.
WARNING	User must not contact a fuse holder with a patient simultaneously during operating
	the equipment and not allow patient to touch the fuse holder.

1. Pull the fuse holder out from its receptacle under AC Input on the back panel of SCU.



2. Check the fuse(s) and replace it if necessary, using the fuse type and rating specified above.



3. Push the fuse holder back.



2.4 Battery Charger and Battery Pack

2.4.1 Battery Charger Specifications

Item	Description
Model	FXRC-01A
Simultaneous Charging	Battery Pack 3 EA
Charging Time	2 hours
Rated Power Supply	DC +24V, 2.7 A Max.
Dimension (W \times H \times D)	192.0 mm × 167.5 mm × 223.4 mm
Weight	1.2 kg

Table 2.6	Battery	Charger	Specifications
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2.4.2 Battery Charger Components



Figure 2.6 Battery Charger

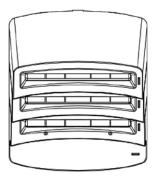
No.	Name	Description	
1	Battery Compartment	Insert the battery pack to charge.	
2	Charging Indicator	Indicates the charging status.	
		(Orange: Charging, Green: Fully Charged)	
3	Power Indicator	Indicates the power on/off status.	
4	DC Input	Connect the DC adapter to supply electrical power to the battery	
		charger.	

Table 2.7 Battery Charger Components



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2.4.3 Battery Charger Dimension



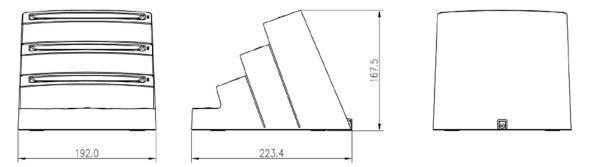


Figure 2.7 Battery Charger Dimension



2.5 Battery Pack

2.5.1 Battery Pack Specifications

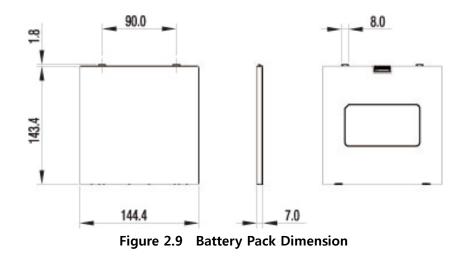
ltem	Description
Model	FXRB-01A
Туре	Lithium Polymer
Rated Power Supply	Output: DC +7.4V
Capacity	4000 mA h
Number of Cell	2S1P (2 Series 1 Parallel)
Dimension (W \times H \times D)	144.4 mm × 143.4 mm × 7.0 mm
Weight	220 g

Table 2.8Battery Pack Specifications





2.5.2 Battery Pack Dimension





2.5.3 Charging Battery Pack

The battery pack supplies power to the detector during wireless connection. Be sure to use only the dedicated battery pack and fully charge it before use.

- 1 Connect the power cable (adapter not included) to the DC Input port of the battery charger and the power cord to the power source to supply power. The power LED lights in green indicating the presence of direct current (DC) power.
- 2 Insert the battery pack into the battery charger. Charging starts automatically. The charge LED lights orange when the battery pack is being charged. After the battery pack is charged completely, the charge LED lights in green.
- 3 Gently pull the charged battery pack to remove from the battery charger.

WARNING	Securely plug the power cord into the power source. If contact failure occurs, or if dust or metal objects come into contact with the exposed metal prongs of the plug, fire or electrical shock may occur.
CAUTION	Be sure to stop charging the battery pack when the charge LED lights in green beyond the specified charging time. Not doing so may result in battery pack overheating or smoking or in explosion or fire.
CAUTION	You must use the power adaptor that is certified with IEC 60950 or IEC 60601-1.

i	Three batteries can be charged at the same time.
i	It takes approximately two hours to fully charge a battery pack. The required charging time may vary depending on the temperature and remaining battery level.



2.6 X-ray Generator Interface

2.6.1 X-ray Exposure Mode

Mode		Description
DR Trigger Mode	1	The detector receives EXP_REQ signal that X-ray generator is prepared to
		generate X-rays.
	2	The detector prepares image acquiring and then responds EXP_OK signal to the
		X-ray generator.
	3	The X-ray generator confirms EXP_OK signal and generates X-rays, then the
		detector performs image acquiring according to Image Acquisition Time and
		transmits the image data.
	•	EXP_REQ (Generator \rightarrow Detector), EXP_OK (Detector \rightarrow Generator)
AED Mode	•	The detector detects actual amount of X-rays without any connection to the X-ray
		generator, and then performs image acquiring according to Image Acquisition Time
		and transmits the image data.
	•	No signal used (No need to connect Generator Interface Cable.)

Table 2.9 Exposure Mode

2.6.1.1 DR Trigger Mode

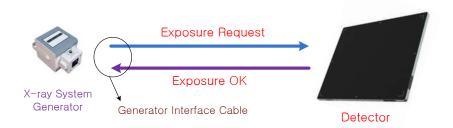


Figure 2.10 DR Trigger Mode Configuration

• DR Trigger is the most common and recommended exposure mode. User can achieve the best quality images with DR Trigger Mode.



2.6.1.2 AED Mode





Figure 2.11 AED Configuration

• AED is available for acquiring images without any connection to X-ray generator. Generator interface cable is not required.

	•	Make sure to follow operating environmental requirements (Temp: +10 \degree ~ +35 \degree).
	•	If you use AED Mode out of operating environmental requirements, unwanted image
		can be acquired without X-ray image acquiring.
•	•	Do not hit or drop the equipment. Unwanted images may be acquired in the AED
		Mode if it receives strong jolt.
	•	If you use a Grid under general imaging condition (Dose) or image a thick object in
CAUTION		the AED Mode, the efficiency of X-ray transformation may be reduced about $0\% \sim 2\%$
		compared to the DR Trigger Mode according to the thickness of the target.
	•	If you image a thick object in the AED Mode with low X-ray tube voltage, an image
		may not be acquired or horizontal line noise may occur.



2.6.2 Timing of Signals (DR Trigger Mode)

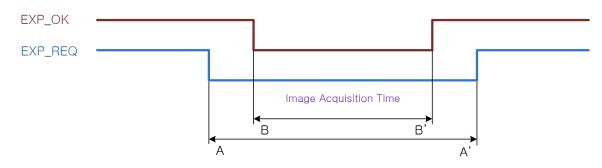


Figure 2.12 Timing of Exposure signal

- Image Acquisition Time+
 - Exposure request signal A (EXP_REQ) should be applied first, then exposure respond signal B (EXP_OK).
 - Image Acquisition Time can be set from 40 ms to 4,000 ms with 1 ms increment when default value is 500 ms.

2.6.3 EXT_INF Port Pin Assignment

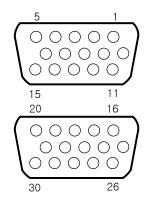


Figure 2.13 EXT_INF port pin assignments





No.	Signal Name	I/O	Color	Description	
				Detector receives signal that X-ray generator is	
1	EXP_REQ+_A	Input	Red	prepared to generate X-rays.	
I		mput	Reu	Contact Type – On: Closed, Off: Open	
				For the 1st DR Interface of Generator	
2	EXP_REQA	Input	Black	Return signal from EXP_REQ+_A.	
				Detector receives signal that X-ray generator is	
				prepared to generate X-rays.	
3	EXP_REQ_TTL_A	Input	Orange	TTL (Voltage) Type – On: VCC, Off: GND	
				• Current (5 mA ~ 10 mA), Voltage (12 V ~ 24 V)	
				For the 1st DR Interface of Generator	
4	EXP_REQ_GND_A	Input	Gray	Return signal from EXP_REQ_TTL_A	
				Power of TTL signal coming from X-ray generator	
5	EXP_OK_POWER_A	Input	Yellow	This is for the 1st DR Interface of Generator, but	
				it can be shared with the 2nd DR Interface.	
				Detector responds to X-ray generator about X-	
				ray generation.	
6	EXP OK+ A	Output	Green	The X-ray generator generates X-rays according	
0	EXF_OR+_A	Output	Gleen	to this signal and then the detector performs X-	
				ray image acquiring.	
				For the 1st DR Interface of Generator	
7	EXP_OKA	Output	Brown	Return signal from EXP_OK+_A	
8	EXP_OK+_B	Output	Blue	Same as "EXP_OK+_A" for the 2nd DR Interface of	
	EXF_OR+_B	Output	Diue	Generator.	
9	EXP OK- B	Output	Pink	Same as "EXP_OKA" for the 2nd DR Interface of	
	EXF_ORB	Output		Generator.	
10	Reserved	-	-	Do not connect. Reserved for testing.	
11		loout	\//bito	Same as "EXP_REQ+_A" for the 2nd DR Interface of	
	EXP_REQ+_B	Input	White	Generator.	
12		loo: ··	Durale	Same as "EXP_REQA" for the 2nd DR Interface of	
	EXP_REQB	Input	Purple	Generator.	
13		ا بر مور		Same as "EXP_REQ_TTL_A" for the 2nd DR	
	EXP_REQ_TTL_B	Input	White/Red	Interface of Generator.	
14		loo: ·f	White/Black	Same as "EXP_REQ_GND_A" for the 2nd DR	
	EXP_REQ_GND_B	Input		Interface of Generator.	
15	Reserved	-	-	Do not connect. Reserved for testing.	
		1- 2 10		rt nin description (1 \sim 15)	

Table 2.10EXT_INF1 port pin description (1 ~ 15)





No.	Signal Name	I/O	Color	Description
16	EXP_REQ+_C	Input	Red	Same as "EXP_ REQ+_A" for the 3rd DR Interface of
10		input	Neu	Generator.
17	EXP_REQC	Input	Black	Same as "EXP_ REQA" for the 3rd DR Interface of
		mput	DIACK	Generator.
18	EXP_REQ_TTL_C	Input	Orange	Same as "EXP_REQ_TTL_A" for the 3rd DR
		mpar	orango	Interface of Generator.
19	EXP REQ GND C	Input	Gray	Same as "EXP_REQ_GND_A" for the 3rd DR
		mpar	Cluy	Interface of Generator.
20	EXP_OK_POWER_C	Input	Yellow	Same as "EXP_OK_POWER _A" for the 3rd DR
		mpar	1011011	Interface of Generator.
21	EXP OK+ C	Output	Green	Same as "EXP_OK+_A" for the 3rd DR Interface of
		0 0.19 0.1		Generator.
22	EXP_OKC	Output	Brown	Same as "EXP_OKA" for the 3rd DR Interface of
		0 0.19 0.1		Generator.
				• Detector receives the 1st status signal that it is
23	EXT_A+	Input	-	equipped on/in the table or in the wall stand.
				Contact Type – On: Closed, Off: Open
24	EXT_A-	Input	-	Return signal from EXT_A+
25	EXT_B+	Input	-	Same as "EXT_A+" for the 2nd status signal
26	EXT_B-	Input	-	Same as "EXT_A-" for the 2nd status signal
27	EXT_C+	Input	-	Same as "EXT_A+" for the 3rd status signal
28	EXT_C-	Input	-	Same as "EXT_A-" for the 3rd status signal
29	EXT_D+	Input	-	Same as "EXT_A+" for the 4th status signal
30	EXT_D-	Input	-	Same as "EXT_A-" for the 4th status signal

Table 2.11EXT_INF2 port pin description (16 ~ 30)



2.6.4 Input and Output Circuits

The following diagrams describe exposure request and exposure OK circuits.

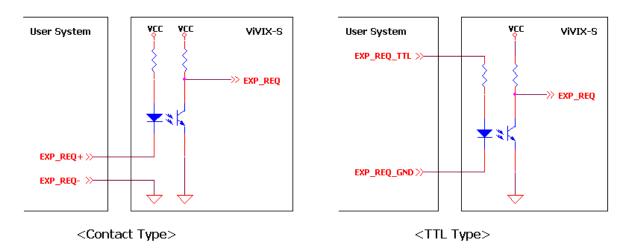


Figure 2.14 Exposure Request Input Circuit

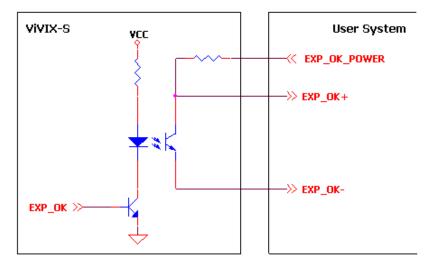
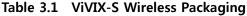


Figure 2.15 Exposure Respond Output Circuit



3. Packaging and Contents

Detector (FXRD-1417WA/B)	System Control Unit (FXRS-03A)			
Battery Charger	Battery Pack			
Generator Interface Cable (15M)	LAN Cable (Gigabit LAN, 15M)			
AC Power Cable	Tether Interface			
C St				
Installation Software CD				
Viewer:	VXvue			
Calibration SW:	VXSetup			
Calibration Data				





4. How to Install

4.1 Hardware Installation

This section describes how to connect the flat panel imaging system (detector) whose model name is FXRD-1417WA(B).



Installation of this equipment should be made by licensed and authorized personnel.

4.1.1 FXRD-1417WA (B)

1 Connect the one end of the generator interface cable to the EXT_INF port of SCU, and the other to the port of the X-ray generator.



2 Connect the one end of the LAN cable to Port 1 of SCU, and the other to the LAN Card Connector of workstation assigned for the Data Transfer.





3 Make an antenna of SCU stand upright.



4 To transmit image data using Tether Interface, connect the one end of the Tether Interface cable to Port 4 or Port 5 of SCU.







5 Connect the power cable to the AC port of the SCU to supply power.



This equipment must only be connected to a supply mains with protective earth.



6 Turn on the power switch in front of the SCU.





7 Attach a fully charged battery pack to the detector. To attach the battery pack, slide the battery pack into the battery compartment of the detector. Make sure that the claws on the battery pack are aligned with the groove on the battery compartment. Slide the battery lock lever until it clicks into place.



8 Press and hold the power button of the detector for 3 seconds to turn on the detector.



9 When you have finished using the detector, press and hold the power button for 3 seconds to turn off the detector. Remove the battery pack if the detector will not be used for some time. To remove the battery pack, slide the battery lock lever to release it, put your fingers on the battery compartment groove that lifts up, and then pull out the battery pack.



When the detector is not be used for some time, remove the battery pack. Otherwise, over discharge may occur, resulting in shortened battery life.



4.2 Software Installation

4.2.1 Intel Gigabit Controller Driver Installation and Setting

	Before installing Intel Gigabit Controller Driver, make sure your Ethernet Card is properly
	installed on the workstation.
(\mathbf{i})	The recommended Ethernet Card is $Intel^{ extsf{B}}$ Gigabit CT or later. And also, Ethernet Card
	supporting 1 Gbps or above is available.
	Gigabit LAN card must support the following requirements.
	[Jumbo Frames: 9014 Byte], [Receive Descriptors: 2048]



This is not a component of ViVIX-S but recommend component. So, you have to use installation package designed for your Gigabit Controller.
1~8 steps may differ according to Gigabit Controller to use.
Following procedures are provided as an example to refer to.

1 Click **PROXP.exe** to start InstallShield Wizard, and then click the **Run** button.





2 Click the **Next** button.



3 Accept the license agreement and click the **Next** button.

License Agreement Please read the following license agree	eement carefully.		(intel
INTEL SOFTWARE LIC	ENSE AGREEMEN	(Final, License)	
IMPORTANT - READ BEFO	DRE COPYING, INS	TALLING OR USI	NG.
"Software") until you have careful loading or using the Software, you do not wish to so agree, do not ins	ly read the followi agree to the term	ng terms and co is of this Agreen	nditions. By
"Software") until you have careful loading or using the Software, you do not wish to so agree, do not ins LICENSES: Please Note:	lly read the followi agree to the term stall or use the Sof	ng terms and co is of this Agreen	nditions. By
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Do not use or load this software an "Software") until you have careful loading or using the Software, you do not wish to so agree, do not ins LICENSES: Please Note: I accept the terms in the license agre I do not accept the terms in the licen stallShield	ly read the followi a gree to the term stall or use the Sof	ng terms and co is of this Agreen	nditions. By nent. If you



4 Select the components to install and click the **Next** button.

ntel(R) Network Connections	×
Setup Options Select the program features you want installed.	(intel)
Install:	
Drivers Manager Intel(R) PROSet for Windows* Device Manager Advanced Network Services Intel(R) Network Connections SNMP Agent	
Feature Description	
	ext > Cancel

5 Click the **Install** button.

eady to Install the Program	(intel
The wizard is ready to begin installation.	under
Click Install to begin the installation.	
If you want to review or change any of your installation setti exit the wizard.	ngs, click Back. Click Cancel to



6 When the following message appears, click the **Continue Anyway** button.



7 Installation status bar appears in Installing Intel® Network Connections dialog box.

🙀 Intel(R)	Network Connections - InstallShield Wizard	<u>- 🗆 ×</u>
and the second sec	Intel(R) Network Connections ram features you selected are being installed.	(intel)
P	Please wait while the InstallShield Wizard installs Intel(R) Network Connections. This may take several minutes.	
	Status:	
	Compiling MOFs	
InstallShield -		
	< Back Next >	Cancel
	< Dark Maxes	Canual



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8 Click the **Finish** button.



4.2.2 Gigabit Controller Setting on Windows XP

1 Click Start > Setting > Control Panel > Network Connections to open the Network Connections dialog box, and then rename Local Area Connection with GigE.

Network Connections					
ile <u>E</u> dit <u>V</u> iew F <u>a</u> vorites <u>I</u>	ools	Advanced	Help		
🕽 Back 🝷 🕥 🖌 🏂 🔎	Sear	ch 😥 Fold	ders 🛄 🕶		
dress 💊 Network Connections					💌 🄁 Go
		Name	Туре	Status	Device Name
Network Tasks 🏾 🕆		LAN or Hi	gh-Speed In	ternet	
 Create a new connection Set up a home or small office network Change Windows Firewall settings 		uscu Loicom Loige	LAN or LAN or LAN or	Network cabl Connected Limited or no	Broadcom NetXtreme Gigabit Ethernet - Broadcom NetXtreme 57xx Gigabit Con Intel(R) PRO/1000 GT Desktop Adapter
See Also 🎓					
	-	4			•



It is not necessary to change name with GigE. It just distinguishes between that connection and other connections.

2 Right-click the **GigE** and then click the **Properties**.



3 Uncheck all checkboxes except Vieworks Image Filter Driver or GigaLinx Image Filter Driver and Internet Protocol [TCP/IP].

Intel(R) PRO/10	00 GT Desktop Adap	<u>C</u> onfigure
his connection uses th	Location: Slot 5 ne f(MAC Address: 00-1	IB-21-19-4E-9F
File and Printe OS Packet S Thternet Protoc	and the second	letworks
I <u>n</u> stall	<u>U</u> ninstall	Properties
	icket Scheduler. This c ffic control, including rat	
Show icon in notific	ation area when conne	cted

4 Click the **Internet Protocol [TCP/IP]** and set the IP as shown below, and then click the **Advanced** button.

		-	-			?
eneral						
You can get IP settings assigned aut this capability. Otherwise, you need to the appropriate IP settings.						
C Obtain an IP address automatic	cally					
- 🖲 Use the following IP address: -	60					
<u>I</u> P address:	16	9.2	54.	0	. 50	
S <u>u</u> bnet mask:	25	5.2	55.	0	. 0	
<u>D</u> efault gateway:	S. 21 20	10				
C Obtain DNS server address aut	tomatica	ally				
- 🖲 Use the following DNS server a	address	es:				
Preferred DNS server:			•	_	•	
Alternate DNS server:		×			•	
				Ī	Adya	nced
		1	01	~	1	Cancel



5 Click the **OK** button to close the dialog box.

GigE Properties	? ×
General Advanced	
Connect using:	
Intel(R) PRO/1000 GT Desktop Adag	<u>C</u> onfigure
Location: Slot 5 This connection uses the f(MAC Address: 00-1B-	21-19-4E-9F
Client for Microsoft Networks File and Printer Sharing for Microsoft Net OS Packet Scheduler To Thernet Protocol (TCP/IP) Install Uninstall	works
Description Quality of Service Packet Scheduler. This com provides network traffic control, including rate-o prioritization services.	ponent
☐ Sho <u>w</u> icon in notification area when connecte ✓ Notify <u>m</u> e when this connection has limited or	Second and a second second second
OK	Cancel

6 Click Start > Setting > Control Panel > Network Connections to open the Network Connections dialog box, and right-click GigE, and then click Properties to open the GigE Properties dialog box. Click the Configure button to open the following dialog box, and then go to the Advanced tab.

	/1000 GT Des	ktop Adapter #2 Properties
Teaming General	VLANs Link Spee	Boot Options Driver Resources d Advanced Power Management
	ntel(R) PRO/100	00 GT Desktop Adapter #2
C)evice type:	Network adapters
N	fanufacturer:	Intel
L	ocation:	PCI Slot 5 (PCI bus 5, device 4, function 0)
	vice is working p re having probler	roperly.
	troubleshooter.	
start the	troubleshooter.	Iroubleshoot
start the	e troubleshooter. age:	Iroubleshoot



7 Set the **Jumbo Frames** to the maximum value.

tel(R) PRO/1	000 GT Deskto	p Adapter #2	Properties	? >
Teaming General	VLANs E Link Speed	8oot Options Advanced		Resources inagement
(intel)	Advanced Ada	pter Settings		
<u>S</u> ettings:		, j	<u>/</u> alue:	
	er Slave Mode		Disabled	-
Log Link Stal	nistered Address :e Event		Disabled 4088 Bytes 9014 Bytes	
Performance OoS Packet			16128 Bytes	
	ading Options	•	Use <u>D</u> efa	iult
Jumbo Fram	ies			
	protect your secu from showing activ			
where lar <u>c</u> latency ca	mbo Frame capab le packets make u n be tolerated, Jun nd improve wire e	p the majority of nbo Frames can	traffic and addit	Contraction and Contraction
	nes are larger tha imately 1.5k in siz		rnet frames, wh	ich 💌
			ОК	Cancel

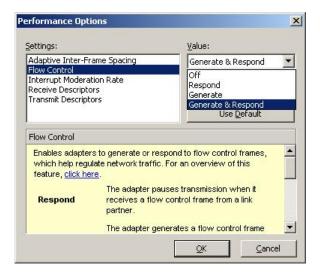
8 Choose **Performance Options** in the list of Settings and click the **Properties** button on the right.

el(R) PRO/1	000 GT Desk	top Adapter #2 F	Properties	?
Teaming	VLANs	Boot Options	Driver	Resources
General	Link Speed	Advanced	Powe	r Management
(intel)	Advanced A	dapter Settings		
Settings:				
	er Slave Mode	<u> </u>	Prop	erties
Locally Admi	nistered Addres	55		
Log Link Sta Performance				
QoS Packet				
TCP/IP Offlo Wait for Link	ading Options	-		
	, 			
Performanc	e Options			
Configures performan		use settings that ca	an improve a	adapter 🖾
				T
			<u></u>	Cancel





9 Choose **Flow Control** in the list of Settings and **Generate & Respond** in the list of Value as shown below.

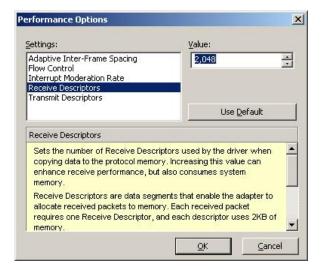


10 Choose **Interrupt Moderation Rate** in the list of Settings and **Extreme** in the list of Value as shown below.

jettings:	<u>V</u> alue:
Adaptive Inter-Frame Spacing Flow Control	Extreme
now Control Interrupt Moderation Rate Receive Descriptors Transmit Descriptors	Off Minimal Low Medium High
Interrupt Moderation Rate	Extreme Adaptive
This sets the rate at which the cor generation of interrupts making it p throughput and CPU utilization. The adjusts the interrupt rates dynamic and network usage. Choosing a di	ossible to optimize network default setting (Adaptive) ally depending on traffic type fferent setting may improve
network and system performance	



11 Choose **Receive Descriptors** and set to the maximum value.



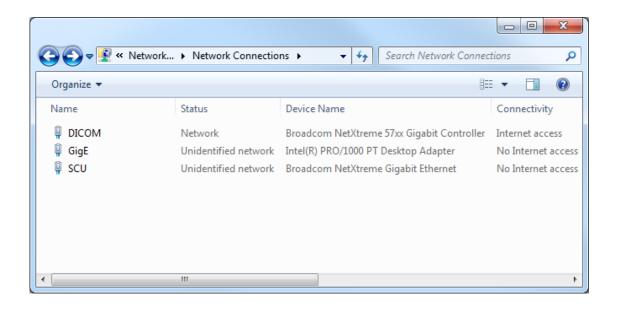
12 Click the **OK** button.



4.2.3 Gigabit Controller Setting on Windows 7

1 Click Start > Control Panel > Network and Internet > Network and Sharing Center > Change

Adapter Setting and then rename Local Area Connection with GigE.





It is not necessary to change name with GigE. It just distinguishes between that connection and other connections.

2 Right-click the **GigE** and then click the **Properties**.



3 Uncheck all checkboxes except Vieworks Image Filter Driver or GigaLinx Image Filter Driver and Internet Protocol [TCP/IP].

GigE Properties
Networking Sharing
Connect using:
Intel(R) PRO/1000 PT Desktop Adapter
Configure
This connection uses the following items:
Ahnlab Light Weight Filter QoS Packet Scheduler File and Printer Sharing for Microsoft Networks Antemet Protocol Version 6 (TCP/IPv6)
✓ ▲ Internet Protocol Version 4 (TCP/IPv4) ▲ Link-Layer Topology Discovery Mapper I/O Driver
Link-Layer Topology Discovery Responder
4 III +
Install Uninstall Properties
Description GigaLinx Image Filter Driver
OK Cancel

4 Click the **Internet Protocol [TCP/IP]** and set the IP as shown below, and then click the **Advanced** button.

Internet Protocol Version 4 (TCP/IPv4)	Properties
General	
You can get IP settings assigned autor this capability. Otherwise, you need to for the appropriate IP settings.	
Obtain an IP address automatical	ly
Use the following IP address:	
IP address:	169.254.0.55
S <u>u</u> bnet mask:	255.255.0.0
Default gateway:	· · ·
Obtain DNS server address autor	natically
• Use the following DNS server add	resses:
Preferred DNS server:	
Alternate DNS server:	· · ·
Validate settings upon exit	Ad <u>v</u> anced
	OK Cancel



5 Click Start > Control Panel > Network and Internet > Network and Sharing Center > Change
 Adapter Setting, right-click GigE, and then click Properties to open the GigE Properties dialog box.
 Click the Configure button to open the following dialog box, and then go to the Advanced tab.

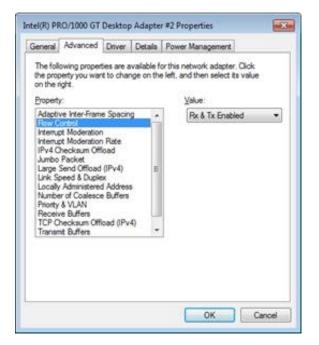
Intel(R) PR	0/1000 PT Deskto	p Adapter Properties	×
General	Advanced Driver	Details Power Management	
2	Intel(R) PRO/1000) PT Desktop Adapter	
	Device type:	Network adapters	
	Manufacturer:	Intel	
	Location:	PCI bus 2, device 0, function 0	
	e status device is working pro	operly.	*
			Canad
		ОК	Cancel

6 Set the **Jumbo Packet** to the maximum value.

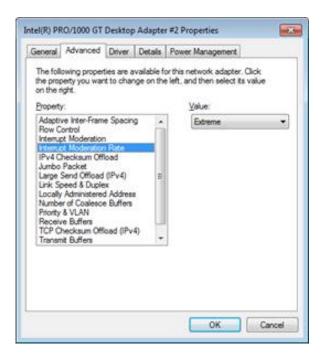
Seneral	novanceo	Driver	Detais	Power Management	
	berty you war			or this network adapter. Click eleft, and then select its value	
Property	r.			Yalue:	
Interus IPv4 C	ot Moderation pt Moderation hecksum Off	Rate		9014 Bytes (Alteon)	•
Large 2 Link Sg Locally Numbe Priority Receiv TCP O	Send Offload peed & Duple Administered of Coalesco & VLAN te Buffers hecksum Offl	x I Addres Buffen			
	st Buffers hecksum Off	load (IP)	-4) -		



7 Choose Flow Control in the list of Property and select Rx & Tx Enabled in the list of Value as shown below.



8 Choose Interrupt Moderation Rate in the list of Property and Extreme in the list of Value as shown below.





9 Choose **Receive Buffers** and set to the maximum value.

on the right. Property:		Value:	
Row Control Interrupt Moderation Interrupt Moderation Rate IPv4 Checksum Offload Jumbo Packet Large Send Offload (IPv4) Link Speed & Duplex Locally Administered Address Number of Coalesce Buffers Priorty & VLAN Receive Buffers TCP Checksum Offload (IPv4) Transmit Buffers UDP Checksum Offload (IPv4)	* (" " ") *	2048	A.

10 Click the **OK** button.



4.2.4 VXvue Installation

User must follow instructions below to protect against cyber security threats such as virus and worms.

- Prior to installing and using VXvue, scan the computer system with anti-virus software to make sure the system is virus free.
- Install, setup and enable adequate anti-virus software.
- The operating system should be updated frequently to protect VXvue against harmful activities.
- If you have a cyber security problem, contact the manufacturer on the phone or by email referring to the contact information in this manual.
- 1 Insert the CD/DVD into the CD Drive.
- 2 Run Setup.exe.
- 3 Click the **Yes** button when the following dialog appears. The dialog may not appear depending on your Windows settings.

😗 Use	er Account Control	
Û	Do you want to allow the following program from an unknown publisher to make changes to this computer?	
	Program name: Publisher: File origin:	setup.exe Unknown Hard drive on this computer
ي ا	Show details	Yes No
		Change when these notifications appear



4 The prerequisites for VXvue installation are displayed in the **VXvue – InstallShield Wizard** dialog, then click the **Install** button. The installation may take several minutes depending on your system environment.

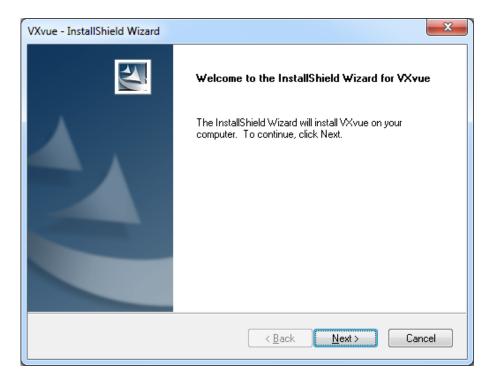
VXvue - In	istallShield Wizard
	VXvue requires the following items to be installed on your computer. Click Install to begin installing these requirements.
Status	Requirement
Pending	g vcredist_x86_2010
Pending	9 Microsoft SQL Server 2008 Express R2 (x86)
	Install Cancel



The items listed under the **Requirement** may from the above figure depending on your system environment.



5 When the prerequisites for VXvue installation have been installed, click the **Next** button.



6 A driver for recognizing license hardware key will be installed on your system during setup process. If the window installing the driver appears, do not close the window and wait for the installation to complete.





7 Choose the application type and click the **Next** button.

VXvue - InstallShield Wizard	×
Setup Type Select the setup type that best suits your needs.	2
Select the application type.	
VXvue for Human	
○ VXvue for Vet.	
InstallShield	
Kack N	ext > Cancel

8 Choose the folder location where you want to save VXvue data. The default destination is D:\Database. To change the folder location, click the **Browse** button to locate the folder.

VXvue - InstallShield Wizard	×
Choose Database Folder	
Select the application type.	
Destination Folder	
D:\Database	Browse
InstallShield	
	< <u>B</u> ack <u>N</u> ext > Cancel



9 Click the **Install** button to begin VXvue installation.

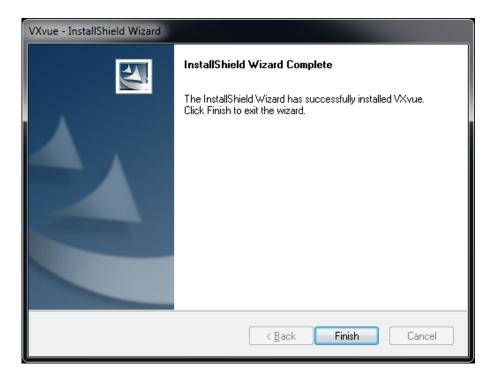
VXvue - InstallShield Wizard
Ready to Install the Program The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield ————————————————————————————————————

10 The installation process will continue and a progress bar will be displayed in the **Setup Status** window.

VXvue - InstallShield Wizard	— X
Setup Status	
The InstallShield Wizard is installing VXvue	
Copying new files	
InstallShield	Cancel



11 When the installation is complete, click the **Finish** button.



12 When Filter Driver installation dialog appears after installing VXvue, choose **BroadLinx Universal Filter Driver** and click the **Next** button.

GigE Conn	ect Driver Manager
<i>[</i>	Please select the type of the driver to install, uninstall or configure
(BroadLinx Universal Filter Driver Can be installed over any network adapter card
	- Provides excellent performance
	< Back Next > Cancel



13 Select the network interface card connected to SCU and click the **Next** button.

GigEConnect Driver Manager	
Configure BroadLinx Universal Filter Driver	
Install BroadLinx Universal Filter Driver on these network interfaces:	
☑ Intel(R) PRO/1000 MT Network Connection	
🔘 Uninstall BroadLinx Universal Filter Driver	
< Back Next >	Cancel



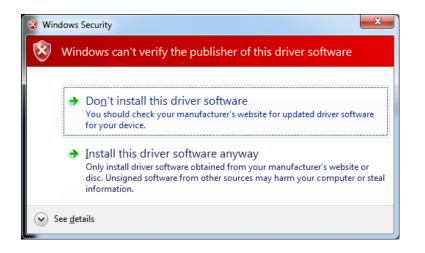
The above figure may vary depending on your system environment.

14 The progress of Filter Driver installation will be displayed.

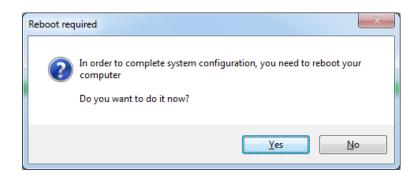
GigEConnect Driver Manager				
Please wait while Driver Man	ager configures your system			
Installing BroadLinx Universal Filt	er Driver			
		< <u>B</u> ack <u>N</u> e	ext > Cancel	



15 Click **Install this driver software anyway** when the following dialog appears.



16 After completing installation, click the **Yes** button to restart the computer.



- 17 Now the VXvue software and data are successfully installed in each directory as shown below.
 - Software: C:\program files\VXvue
 - Image and other data: D:\Database or user defined folder
 - Executable File

_

- VXvue.exe: Image Viewer
- VXSetup.exe: Calibration Software

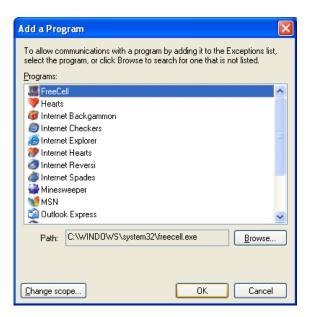


4.2.5 Allowing VXvue to communicate through Windows Firewall on Windows XP

- 1 Click Start > Setting > Control Panel > Windows Firewall and then click the Exceptions tab.
- 2 Click the **Add Program...** button.

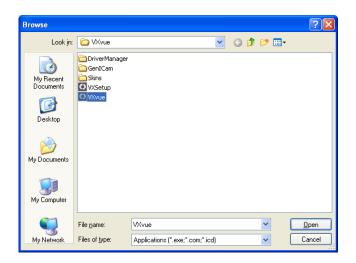
🐱 Windows Firewall 🛛 🔀
General Exceptions Advanced
Windows Firewall is blocking incoming network connections, except for the programs and services selected below. Adding exceptions allows some programs to work better but might increase your security risk.
Programs and Services:
Name
 ☐ File and Printer Sharing ☑ Network Diagnostics for Windows XP ☑ Remote Assistance ☐ Remote Desktop ☐ UPnP Framework
Add Program Add Port Edit Delete
Display a notification when Windows Firewall blocks a program
What are the risks of allowing exceptions?
OK Cancel

3 Click the **Browse** button and locate C:\Program files\VXvue\VXvue.





4 Click the **Open** button.



5 Select the **VXvue** and then click the **OK** button.

Add a Program	×
To allow communications with a program by adding it to the Exceptions list, select the program, or click Browse to search for one that is not listed.	
Programs:	
🥑 Internet Reversi 🛛 🔼	
🥔 Internet Spades	
Winesweeper	
MSN .	
Signation Express	
September 2017	
ii Solitaire	
Spider Solitaire	
S Windows Messenger	
🕲 Windows Messenger	
Path: C:\Program Files\VXvue\VXvue.exe Browse	1
	'
Change scope OK Cancel]



6 Check the **VXvue** to select and then click the **OK** button.

🐱 Windows Firewall 🛛 🔀
General Exceptions Advanced
Windows Firewall is blocking incoming network connections, except for the programs and services selected below. Adding exceptions allows some programs to work better but might increase your security risk.
Programs and Services:
Name
☐ File and Printer Sharing ☑ Network Diagnostics for Windows XP
Kernote Assistance Remote Desktop UPnP Framework
Add Program Add Port Edit Delete
Display a notification when Windows Firewall blocks a program
What are the risks of allowing exceptions?
OK Cancel





4.2.6 Allowing VXvue to communicate through Windows Firewall on Windows 7

- 1 Click Start > Control Panel > Windows Firewall.
- 2 Click Allow a program or feature through Windows Firewall.

🕒 🗢 📾 🕨 Control Panel 🕨	All Control Panel Items Windows Firewall		✓ 4 Search Con
Control Panel Home	Help protect your computer wit	h Windows Firewall	0
Allow a program or feature through Windows Firewall	Windows Firewall can help prevent hacker through the Internet or a network.	rs or malicious software from gaining access to your computer	
😵 Change notification settings	How does a firewall help protect my com	puter?	
Turn Windows Firewall on or off	What are network locations?		
Restore defaults	Home or work (private)	networks Not Connected 😒	
Advanced settings Troubleshoot my network	Ublic networks	Connected 🕢	
Thouseshoot my network	Networks in public places such as airport	ts or coffee shops	
	Windows Firewall state:	On	
	Incoming connections:	Block all connections to programs that are not on the list of allowed programs	
	Active public networks:	Unidentified network	
	Notification state:	Notify me when Windows Firewall blocks a new program	
See also Action Center			
Action Center Network and Sharing Center			
Network and Sharing Center			

3 Click the **Change settings** button if it is enabled and then click the **Allow another program** button.

Control Panel + All Control Panel Items + Windows Firewall + Allowed Programs Control Panel + All Control Panel Items + Windows Firewall To add, change, or remove allowed programs and pots, click Change settings. What are the risks of allowing a program to communicate? What are the risks of allowing a program to communicate? What are the risks of allowing a program to communicate? Image: State Control Panel Items What are the risks of allowing a program to communicate? Image: State Control Panel Items What are the risks of allowing a program to communicate? Image: State Control Panel Items Image: State Control Items Image: State Control Panel Items Image: State Control Items Image: State Control Panel Items Image: State Control Panel Items Image: State Control Panel Items Image: State Contrel Items I						C
To add, change, or remove allowed programs and ports, click Change settings: What are the risks of allowing a program to communicate? @Change settings Allowed programs and features: Name Home/Work (Private) Public Øllowed programs and features: Manuab Report BranchCache - Content Retrieval (Uses HTTP) BranchCache - Hosted Cache Client (Uses HTTPS) BranchCache - Hosted Cache Server (Uses HTTPS) ChameleonSetup ChameleonSetup Daemonu.exe Daemonu.exe	🔾 🕞 🚽 🕨 Control Panel 🕨	All Control Panel Items Windows Firewall Allowed Program	5		▼ 4 Sear	rch
To add, change, or remove allowed programs and ports, click Change settings: What are the risks of allowing a program to communicate? Allowed programs and features: Name Home/Work (Private) Public C PanchCache - Conternt Retrieval (Uses HTTP) BranchCache - Hosted Cache Client (Uses HTTPS) BranchCache - Hosted Cache Server (Uses HTTPS) BranchCache - Pero Discover (Uses HTTPS) ChameleonSetup ChameleonSetup Zee Connect to a Network Projector Connect to a Network Projector Daemonu.exe Daemonu.exe						
To add, change, or remove allowed programs and ports, click Change settings. What are the risks of allowing a program to communicate? Allowed programs and features: Name Home/Work (Private) Public Annuels Report BranchCache - Content Retrieval (Uses HTTP) BranchCache - Hosted Cache Client (Uses HTTP) BranchCache - Hosted Cache Server (Uses HTTP) BranchCache - Peor Biscovery (Uses WSD) ChameleonSetup ChameleonSetup Ze Connect to a Network Projector Connect to a Network Projector Deamonu.exe Details Remove		Allow programs to communicate through Window	s Firewall			
What are the risks of allowing a program to communicate? Change settings Allowed programs and features: Image: Change settings Marne Home/Work (Private) Public BranchCache - Content Retrieval (Uses HTTP) Image: Change settings BranchCache - Hosted Cache Server (Uses HTTPS) Image: Change settings ChameleonSetup Image: Change settings ChameleonSetup Image: Change settings Connect to a Network Projector Image: Change settings Daemonu.exe Image: Change settings						
Allowed programs and features: Name Home/Work (Private) Public Ø AhmLab Report Image: Carlow (Uses HTTP) Image: Carlow (Uses HTTP) BranchCache - Hosted Cache Client (Uses HTTP) Image: Carlow (Uses HTTP) Image: Carlow (Uses HTTP) BranchCache - Hosted Cache Server (Uses HTTP) Image: Carlow (Uses HTTP) Image: Carlow (Uses HTTP) BranchCache - Hosted Cache Server (Uses HTTP) Image: Carlow (Uses HTTP) Image: Carlow (Uses HTTP) ChameleonSetup Image: Carlow (Uses HTTP) Image: Carlow (Uses HTTP) Image: Carlow (Uses HTTP) ChameleonSetup Image: Carlow (Uses HTTP) Image: Carlow (Uses HTTP) Image: Carlow (Uses HTTP) ChameleonSetup Image: Carlow (Uses HTTP) Image: Carlow (Uses HTTP) Image: Carlow (Uses HTTP) ChameleonSetup Image: Carlow (Uses HTTP) Image: Carlow (Uses HTTP) Image: Carlow (Uses HTTP) Image: Carlow (Uses HTTP) ChameleonSetup Image: Carlow (Uses HTTP) Image: Carlow (Uses HTTP) Image: Carlow (Uses HTTP) Image: Carlow (Uses HTTP) Daemonu.cex Image: Carlow (Uses HTTP) Image: Carlow (Uses HTTP) Image: Carlow (Uses HTTP) Image: Carlow (Uses HTTP) Daemonu.cex Image: Carlow (Uses HTTP) Image: Carlow (U						
Name Home/Work (Private) Public Ø AhnLab Report Ø BranchCache - Content Retrieval (Uses HTTP) Ø BranchCache - Hosted Cache Client (Uses HTTPS) Ø BranchCache - Peor Discovery (Uses MTDS) Ø Ø ChameleonSetup Ø Ø chameleonSetup Ø Ø chameleonSetup Ø Ø concect to a Network Projector Ø Ø Daemonu.cee Ø Ø Daemonu.cee Ø		what are the risks of allowing a program to communicate:	() Cha	nge settings		
AhnLab Report Image: Carlos - Content Retrieval (Uses HTTP) Image: Carlos - Hosted Cache Client (Uses HTTP) BranchCache - Hosted Cache Server (Uses HTTPS) Image: Cache Client (Uses HTTP) BranchCache - Hosted Cache Server (Uses HTTPS) Image: Cache Client (Uses HTTP) BranchCache - Hosted Cache Server (Uses HTTP) Image: Cache Client (Uses HTTP) ChameleonSetup Image: Cache Client (Uses HTTP) ChameleonSetup Image: Cache Client (Uses HTTP) ChameleonSetup Image: Cache Client (Uses HTTP) Connect to a Network Projector Image: Cache Client (Uses HTTP) Daemonu.coe Image: Cache Client (Uses HTTP) Deamonu.coe Image: Cache Client (Uses HTTP) Cache Client (Uses HTTP) Image: Cache Client (Uses HTTP) Deamonu.coe Image: Cache Client (Uses HTTP) Cache Client (Uses HTTP) Image: Cache Client (Uses HTTP) Deamonu.coe Image: Cache Client (Uses HTTP)		Allowed programs and features:				
BranchCache - Content Retrieval (Uses HTTP)		Name	Home/Work (Private)	Public 🖍		
BranchCache - Content Retrieval (Uses HTTPS)		AhnLab Report		=		
BranchCache - Hosted Cache Server (Uses HTTPS)		BranchCache - Content Retrieval (Uses HTTP)				
BranchCache - Peer Discovery (Uses WSD) Image: Construction of the set of t		BranchCache - Hosted Cache Client (Uses HTTPS)				
ChameleonSetup Image: ChameleonSetup ChameleonSetup.exe Image: ChameleonSetup Connect to a Network Projector Image: ChameleonSetup Core Networking Image: ChameleonSetup Daemonu.exe Image: ChameleonSetup Deamonu.exe Image: ChameleonSetup Details Remove		BranchCache - Hosted Cache Server (Uses HTTPS)				
ChameleonSetup ChameleonSetup Connect to a Network Projector Connect to a Network Projector Core Networking Daemonu.exe Daemonu.exe Details Remove		BranchCache - Peer Discovery (Uses WSD)				
Image: Chameleonstup.exe Image: Chameleonstup.exe Image: Connect to a Network Projector Image: Connect to a Network Projector Image: Connect to a Network Projector Image: Connect to a Network Projector Image: Connect to a Network Projector Image: Connect to a Network Projector Image: Connect to a Network Projector Image: Connect to a Network Projector Image: Connect to a Network Projector Image: Connect to a Network Projector Image: Connect to a Network Projector Image: Connect to a Network Projector Image: Connect to a Network Projector Image: Connect to a Network Projector Image: Connect to a Network Projector Image: Connect to a Network Projector Image: Connect to a Network Projector Image: Connect to a Network Projector Image: Connect to a Network Projector Image: Connect to a Network Projector Image: Connect to a Network Projector <td></td> <td>ChameleonSetup</td> <td></td> <td></td> <td></td> <td></td>		ChameleonSetup				
Connect to a Network Projector		□ ChameleonSetup				
Core Networking Deemonu.exe Deemonu.exe Remove Remove						
Daemonu.exe Z v Deemonu.exe Detaijs Remove		Connect to a Network Projector				
Deemonu.exe						
Detaijs Remove						
		Daemonu.exe		V -		
Allow another program			Detai <u>l</u> s	Re <u>m</u> ove		
Anot of other programme			Allow anothe	er program		
			, more direction	er programm		
			ОК	Cancel		
OK Cancel						



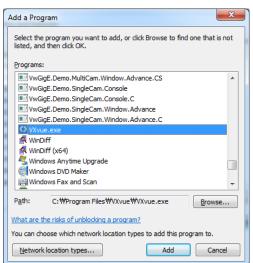
4 Click the **Browse** button and locate C:\Program files\VXvue\VXvue.exe.

Add a Program
Select the program you want to add, or click Browse to find one that is not listed, and then click OK.
Programs:
AhnLab Report
AhnLab V3 Internet Security 8.0
Araxis Merge v6.5
Build Notifications
CD & DVD Copy Demo
Configure HHD Device Monitoring Studio 6.35
Create a System Repair Disc
Data CD.DVD Burner Full Demo
And Data Co. 500 Burning Mire Denio (Unicode)
Device Monitoring Studio
Path: C:\Program Files\AhnLab\V3IS80\AhnRp Browse
What are the risks of unblocking a program?
You can choose which network location types to add this program to.
Network location types Add Cancel

5 Click the **Open** button.

Irganize + New fold	er en				罪	• 💷	
Favorites	Name	Date modified	Туре	Size			
E Desktop	😹 DriverManager	2012-04-10 오후 1:	File folder				
Downloads	📕 GenICam	2012-04-10 9.0 1	File folder				
1 Recent Places	🗼 Skins	2012-04-22 오후 5	File folder				
	VXSetup.exe	2012-04-19 오후 1	Application	490 KB			
Libraries	O Wwe.exe	2012-04-19 오 = 1	Application	824 KB			
Documents							
Music							
Fictures							
Videos							
Computer							
Computer							
Computer Local Disk (Ci) DATAL (D:) DATA2 (Ei)							
Computer							

6 Select the **VXvue** and then click the **Add** button.





Add **VXSetup** (located in C:\Program files\VXvue\VXSetup.exe) in the same manner as described above.



5. Prerequisite for Operation

5.1 Preparing the SCU

1 Turn on the System Control Unit (SCU).



- 2 Make sure the LED lamp (power and status) is lit green. It means SCU is ready to work normally.
- 3 Press and hold the power button of the detector for 3 seconds.
- 4 The detector Power LED is lit green and Active LED is lit orange simultaneously when the detector is ready to operate.
- 5 Blinking green status LED indicates the startup process is in progress. Then status LED turns blue indicating Wi-Fi network is connected.



5.2 Generator Configuration

1 Run VXSetup.

Product : None								
scu								
	Mode FXRS		Serial No, 1234567890	IP Address 169,254,2,100)	Port 5001		
	FANS	-UJA	1204007090	169, 254, 2, 100	J	3001		
)eteci	tors							
ID	Model No,	Serial No,	IP Address	Mac Address	Line Trigger	Discovery		
1	FXRD-1717SA	V09D11802P	169, 254, 1, 14	00:1E:13:40:FF:19		Found		
2	FXRD-1417WA	D3CABH-D004	169, 254, 1, 15	00:0E:8E:27:E0:BD		Found		

2 Select a generator model from the dropdown list located beside Product in the Generator item. Input proper values into Param1 and Param2 according to the generator model.

Generator	Communication	Settings	Remarks
None			No console
LISTEM	Serial	Param 1: Port	
		Param 2: 'true' - Use AEC	
		'false' - No AEC	
		115200 bps / data 8 / stop 1 /	
		none / none	
GXR	UDP packet	UDP 5001 Port	
POSKOM	Will be supported so	pon.	
DK (Accuray)	Serial	Port COM 1	OCX Control
		19200 bps / data 8 / stop 1 /	
		none / none	





Generator	Communication	Settings	Remarks
CPI	Serial	Port COM 1	
		19200 bps / data 8 / stop 2 /	
		none / none	
EMD	Serial	Port COM 3	Set WorkStation 2, 3
		19200 bps / data 8 / stop 1 /	
		none / none	
SEDECAL	Shared memory	Window title: 'window title'	For Human in DRApp.ini
			[SETTINGS]
			DRAppName = window title
			For Vet in AppName.ini
			[CONFIG]
			APPNAME= window title

5.3 Detector Configuration

In this phase, defect pixels are corrected and gained pixels are calibrated using installed x-ray generator and x-ray tube. The detector needs to warm up at least 30 minutes before performing the calibration. The calibration should be performed on the following cases.

- Detector installation
- X-ray generator replacement
- X-ray tube replacement
- Exposure section Value change
- Gain Type change

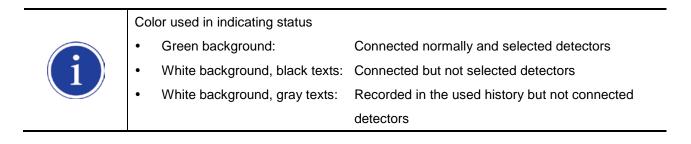


5.3.1 Detector Setting

1 Run VXSetup.

up							
Gener Produ	ator uct : None	•					
SCU							
	Mode	l No.	Serial No,		IP Address		Port
	FXRS	-03A	1234567890		169, 254, 2, 100		5001
Detect	1						
ID .	Model No.	Serial No.	IP Address		Address	Line Trigger	Discovery
1	FXRD-1717SA FXRD-1417WA	V09D11802P D3CABH-D004	169,254,1,14 169,254,1,15		3:40:FF:19 E:27:E0:BD		Found Found
2	1 200-1417#8	DJCADII-D004	103,234,1,13	00.02.0	L.27.LU.DD		i ounu
<u> </u>							
						Refresh dev	vice list
				< 뒤로(<u>B</u>)	다음(<u>N</u>)	> 취:	소

2 The connected detectors will be displayed under **Detectors**. If all the detectors are not displayed, click the **Refresh device list** button to refresh the list.



3 To register connected detector to the system, double click the detector or select the detector and then click the **Select** button activated on the bottom left.

Select	Refresh device list
Belect	Hellesil device list



4 To deselect the registered detector, double click the detector or select the detector and then click the **Release** button activated on the bottom left.

Model No,	Serial No,	IP Address	Mac Address	Line Trigger	Discovery
FXRD-1717SA	V09D11802P	169,254,1,14	00:1E:13:40:FF:19		Found
FXRD-1417WA	D3CABH-D004	169, 254, 1, 15	00:0E:8E:27:E0:BD		Found

- 5 To sort the registered detectors, select the detector and then click the arrow button activated on the bottom left.
- 6 To change the settings of connected detector or SCU, select the item and then click the right mouse button.
 - SCU

Configure
Change IP
Remove Registry

- Configure: Changes the settings related to SCU described in chapter <u>5.3.2.1</u>.
- Change IP: Changes the SCU IP.
- Remove Registry: Removes the data stored in the registry.
- Detector

Release
Change IP

- Release: Deregisters the selected detector.
- Change IP: Changes the detector IP.
- 7 After completing configuration of detectors, click the **Next** button to synchronize the registered detectors with SCU and proceed to next phase.



5.3.2 Configuring Devices

VXSetup	×
SCU Status : Connected Configuration	
Detector 1 : FXRD-1717SA (V09D11802P) [00:1E:13:40:FF:19] Status : Initialization OK Last calibration time : [2012/05/20 18:44]	
Detector 2 : FXRD-1417WA (D3CABH-D004) [00:0E:8E:27:E0:BD] Status : Initialization OK Last calibration time : [Unknown] Calibration Diagnosis	

- 1 The list of connected SCU and registered detectors will be displayed.
- 2 Click the **Configuration** button on the right side of SCU to display the **SCU Configuration** window described in chapter <u>5.3.2.1</u>.
- 3 Click the **Configuration** button on the right side of Detector to display the **Detector Configuration** window described in chapter <u>5.3.2.2</u>.
- 4 Click the **Calibrate** button on the right side of Detector to display the **Calibration** window described in chapter <u>5.4</u>.
- 5 After completing calibration of the detector, the **Diagnose** button will be activated. Click the button to move to <u>Diagnosis Mode</u> described in chapter <u>5.5</u>.



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5.3.2.1 Configuring SCU

SCU Configurati	on					x
System			AP			
Model No.	FXRS-03A	-	AP On/Off	On	Off	
F/W	V00.00.RC96	Upgrade	Frequancy	2.4 GHz	🔘 5 GHz	
Serial No.	1234567890		Country	KR		-
Boot loader	V00.00.RC12	Upgrade	Band	20 MHz		-
Kernel	V00.00.RC28	Upgrade	Channel		6	•
		opgrade	SSID	park_test		
Network			key	1234567890	0	
IP Address	169 . 254	2 . 100	, i			
Net Mask	255 . 255 . (D.O	security	psk2		_
Gateway	169 . 254 . 3	2 . 100	Gi	400	800	
Trigger			Test Mode On/Off	🔘 On	Off	
Pace	ket 🔘) Line	Period	15	0 0	sec.
						500
	Set Config		Log	Cance	el 🚽	

The **SCU Configuration** window allows you to configure the following items.

System

	Model No.:	Model number of SCU
	F/W:	Version of firmware
	Serial No.:	Serial number of SCU
	Boot loader:	Version of Boot loader
	Kernel:	Version of Kernel
Ne	twork	

- IP Address: IP address of SCU
 Net Mask: Netmask of SCU
 Gateway: Gateway address of SCU
- Trigger
 - Packet: Use SW Trigger.
 - Line: Use HW Trigger.





- AP
 - AP On/Off: Configures whether to run SCU as AP mode.
 - Frequency: Frequency channel of wireless network
 - Country: Country code of wireless network
 - Band: Wireless network bandwidth
 - Channel: Wireless network channel
 - SSID: Wireless network ID
 - Key: Wireless network key value
 - Security: Authentication protocol for wireless network
 - Gi: Guard Interval of wireless network
- Test Mode
 - On/Off: Configures whether SCU transmits Trigger Packet within specified period.
 - Period: Configures the period of transmitting Trigger Packet in a second unit.



5.3.2.2 Configuring Detector

System		AP		
Model No.	FXRD-1417WA 👻	AP	⊙ On	
FirmWare	V00.00.RC95 Upgrade	Frequancy	② 2.4 GHz ③ 5 GHz ③	
FPGA	00.01 RC06	Country	JP	-
Serial	D3CABH-D004	Band	40 MHz	-
BootLoader	V00.00.RC12 Upgrade	Channel	+	Ŧ
Kernel	V00.00.RC28 Upgrade	SSID	vivix	
Network	099.000	key	1234567890	
IP	169 . 254 . 1 . 15	security	psk2	Ŧ
NetMask	169 . 254 . 1 . 15	Gi	400	
Gateway	255 . 255 . 0 . 0	Test Pattern		
		Туре	Off	•
WNetwork				
SSID	park_test	Image TimeOut		_
Кеу	1234567890	Time	60	sec.
Sleep Mode				
On/Off	◉ On ◯ Off			
Period	60			

The Detector Configuration window allows you to configure the following items.

• System

Model No.:	Name of device

- FirmWare: Version of detector's firmware
- FPGA: Version of detector's FPGA
- Serial: Serial number of detector
- BootLoader: Version of detector's Boot loader
- Kernel: Version of detector's Kernel
- Network
 - IP: Network IP address of detector
 - NetMask: Network Netmask of detector
 - Gateway: Network Gateway address of detector





WNetwork

SSID:	Wireless network ID of detector

- Key: Wireless network key value of detector
- Sleep Mode
 - On/Off: Configures whether the detector uses Sleep Mode.
 - Period: Configures the time of entering Sleep Mode.
- AP
 - AP On/Off: Configures whether to run Detector as AP mode.
 - Frequency: Frequency channel of wireless network
 - Country: Country code of wireless network
 - Band: Wireless network bandwidth
 - Channel: Wireless network channel
 - SSID: Wireless network ID
 - Key: Wireless network key value
 - Security: Authentication protocol for wireless network
 - Gi: Guard Interval of wireless network
- Test Pattern
 - Type: Type of detector's test pattern image
- Image TimeOut

Time Set timeout not to request transmission when acquired image is not transmitted within specified time.



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5.4 Detector Calibration

5.4.1 Configuring the Detector

1 Select **System Configuration** in the left Step item.

2 The information for the selected detector will be displayed.

ibration FXRD-1417 WIRELE	SS [00:0E:8E:27:E0:8	D]		- Windowski	
tep ystem configuration ffret Calibration - Normal ain Calibration - Normal ain Calibration - Normal etector configuration	Status Done Done Done	Exposure Mode DR Trigger Drable preview Exposure Timing Exposure section : Pre Exposure section : EXP OK Delay section : Debounce_DR : Debounce_AED :	0 0 Set 0 Set 0 Set		
ox	Cancel	Gain Type 0 ① 1	© 2 © 3		



5.4.1.1 Setting Exposure Mode

User can set the detector to three different exposure modes according to the connection type to the X-ray generator. Select the desired mode on **System configuration**.

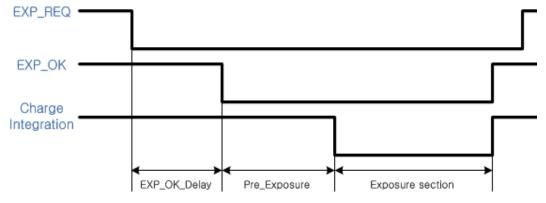
F	or detailed information on X-ray exposure mode, refer to <u>2.6.1 X-ray Exposure Mode</u> .
	Exposure Mode

Exposure Mode	
OR Trigger	AED

5.4.1.2 Timing Setting

To acquire correct images, exact timing setting must be made according to the characteristics of the X-ray generator.

Exposure Timing		
Exposure section :	500	Set
Pre Exposure section :	14 0	Set
EXP OK Delay section :	1	Set
Debounce_DR :	3	Set
Debounce_AED :	3	Set





Exposure section

Exposure section :	500	Set
--------------------	-----	-----

Exposure section indicates the period (unit: ms) that the detector converts X-rays to image signals. This value needs to be set longer than the exposure time of X-ray generator to prevent X-rays loss while converting X-rays to image signals. If you change the time settings, refresh the Post-offset data and generate new GAIN data to acquire optimized images.



The recommended Exposure section value is 500 ms (Standard).

Pre Exposure section

Pre Exposure section :	14	0	Set
------------------------	----	---	-----

The Pre Exposure section is allowed to use when delay is occurred until the generator receives EXP-OK signal from the detector and prepares X-ray generation. Pre Exposure section is set as 0 ms normally, however, it is recommend to set the actual delay time of generator's X-ray generation with measurements to achieve the best performance of the detector. The detector sends EXP_OK signal to the generator, then transforms X-ray into image signal after the time set in the Pre Exposure section.

EXP OK Delay section

EXP OK Delay section :	1	Set
------------------------	---	-----

EXP OK Delay section is delay time from when the detector detects exposure request signal (EXP_REQ) from the X-ray generator to when the detector sends exposure respond signal (EXP_OK) to the X-ray generator. Some X-ray generators need some time to prepare detecting EXP_OK signal after sending EXP_REQ signal. This value is determined according to the specifications of X-ray generator. The default value is 1 ms.



Debounce_DR

Debounce_DR: 3	Set
----------------	-----

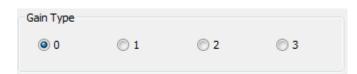
Debounce_DR is used to remove unwanted trigger signal occurred due to external noise when DR Trigger is set as Exposure Mode. It is recommended to use the Debounce_DR setting value as default 3 ms. We recommend setting the minimum exposure time of X-ray generator to more than 3 ms. If the value is set to less than 3 ms, the detector may not acquire images.

Debounce_AED

Debounce_AED :	3	Set

Debounce_AED is used to prevent unwanted imaging occurred due to external noise when AED is set as Exposure Mode. It is recommended to use the default values set by manufacturer. We recommend setting the minimum exposure time of X-ray generator to more than the value set in the Debounce_AED. If the value is set to less than the settings in the Debounce_AED, the detector may not acquire images. If unwanted images are acquired without X-ray exposure while operating the equipment, set Debounce_AED with 1 ms increments. However, make sure not to exceed 5 ms since an image degradation may appear in the image if Debounce AED exceeds 5 ms.

5.4.1.3 Gain Type Setting



To acquire X-ray image with proper brightness, adjust the Gain Type setting. You can select the Gain Type to adjust the sensitivity of the detector, then you can acquire X-ray images with desired brightness according to the specifications of X-ray generator or the type of objects. The default gain type is 1. The following table describes each Gain Type of the sensitivity ratio.

Gain Type		0	1	2	3
Gadox Detector	Sensitivity ratio	0.86	1	1.2	1.5
CsI Detector	Sensitivity ratio	0.62	1	1.14	1.33



The owner is responsible for ensuring that the Gain Pixel Correction is performed after adjusting the Gain Type.



5.4.2 Offset Calibration

5.4.2.1 Pre-offset Calibration

1 Select **Dark acquisition–Normal** and click the **Load pre-offset** button to apply pre-offset data which is provided with the flat panel detector.

itep	Status	Pre-offset calibration
Vistem configuration Vistem Configuration - Normal Viste Catalaration - Normal visit Catalaration - Normal Netector configuration		Current Value :
ок	Cancel	

- 2 When you create new pre-offset data, input the number of images to be acquired to **Stage** in the Preoffset calibration item and then click the **Run pre-offset calibration** button.
- 3 Acquiring image process will be proceeded automatically, then the average value of acquired images will be displayed in **Current Value** and the current status will be displayed in **Stage**.
- 4 After acquiring images, a window for saving created pre-offset data appears, then specify a directory to save the data.

다른 이름으로 저장						×
() ▼ > 2	퓨터 🕨 Working (D:)	 CalibrationData + FXRD- 	1717S	 ✓ ✓ FXRD-1 	717S 검색	٩
구성 ▼ 새 폴더	1					0
이름	*	수정한 날짜	유형	크기		
		일치하는 힘	!목이 없습니다.			
파일 이름(N):	pre.dat					•
파일 형식①:	Pre-offset data files (*	.dat)				•
🔿 폴더 숨기기				저장(<u>S</u>) 취소	



5.4.2.2 Post-offset Calibration

- 1 Click the Get Post offset button to locally save the offset file that is backed up on the detector.
- 2 When you create new post-offset data, input the number of images to be acquired to **Stage** in the Post-offset calibration and click the **Run post-offset calibration** button.

Step Status	Pre-offset calibration
ystem configuration Offeet Calibration - Normal Defect Calibration - Normal Calibration - Normal Detector configuration	Current Value :
OK Cancel	

- 3 Acquiring image process will be proceeded automatically, then the average value of acquired images will be displayed in **Current Value** and the current status will be displayed in **Stage**.
- 4 After acquiring images, a window for saving created post-offset data appears, then specify a directory to save the data.
- 5 To save the previously created post-offset file to the detector, click the **Upload post offset** button and then select the file to upload.



The offset data that is already uploaded to the detector will be used for acquiring images with wireless detector instead of the data stored in the local.



5.4.3 Defect Correction

5.4.3.1 Load defect map

1 Select **Defect detection – Normal** in the left Step item.

Step	Status	Defect map
System configuration Offset Calibration - Normal	Done	Load defect map Auto defect detection Manual defect detection
Defect Calibration - Normal		Defect map path : N/A
Gain Calibration - Normal		
Detector configuration		
OK	Cancel	

2 Click the **Load defect map** button to apply the defect data which is provided with the flat panel detector.



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5.4.3.2 Auto defect detection

1 To create new defect map, apply the Defect data which is provided with the flat panel detector and then click the **Auto defect detection** button.

Defect map auto gen	eration		×
Current value		St	age: of 5
Get flat data			
Target Val	ue	Save acquire	ed data
Flat30 : 250	Get Flat30	Load Flat30	Not ready
Flat60 : 500	Get Flat60	Load Flat60	Not ready
Tolerance (2% ~ 4	0%): 3 %	Generate D	efect Map

2 Acquire X-ray images and adjust the doses of radiation to match the Current value to the Target Value of Flat30. When the Current value reaches within 10% of Target Value, keep the doses of radiation at that point.



For Flat30 and Flat60 the recommended Target Values are respectively 250 and 500.

- 3 To save the collected image data, check the **Save acquired data** checkbox. Once the images of Flat30 and Flat 60 are acquired, it is allowed to save as a file.
- 4 Click the **Get Flat30** button to acquire as many images as the number set at the top of the Stage. Or, load the Flat30 image which is previously saved by clicking the **Load Flat30** button.



- 5 Acquire X-ray images and adjust the doses of radiation to match the Current Value to the Target Value of Flat60. When the Current value reaches within 10% of Target Value, keep the doses of radiation at that point.
- 6 Click the **Get Flat60** button and acquire as many images as the number set at the top of the Stage. Or, load the Flat60 image which is previously saved by clicking the **Load Flat60** button.
- 7 Enter the detection range of Defect data into the **Tolerance** field based on the acquired images.



The recommended Tolerance value is 3%.

8 Click the **Generate Defect Map** button, create the new Defect Map Data file, and then save it.



No need to click the **Load defect map** button since the Defect Map file is automatically created and loaded.



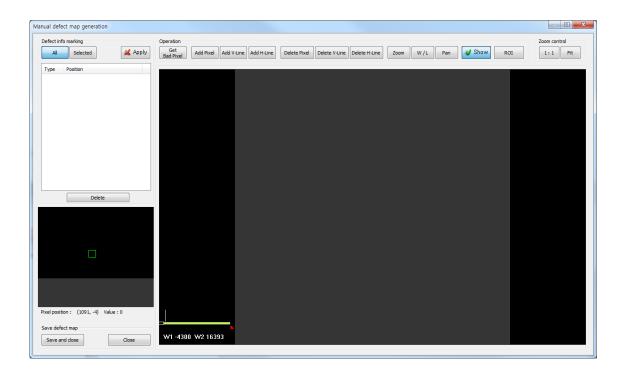
5.4.3.3 Manual defect detection

1 To create the new defect map manually, click the **Manual defect detection** button after applying Defect data provided accordingly.



To use the Manual defect detection feature, the previously acquired dark image is needed. The dark image can be acquired in the Diagnosis Mode.

2 Select the original image file of the detector to find the defect data.





Defect info marking

Defect in All	fo marking Selected	pply
Туре	Position	-
Pixel	x=199, y=204	
Pixel	x=431, y=236	
Pixel	x=241, y=552	
Pixel	x=252, y=1157	
Pixel	x=1420, y=541	
Pixel	x=1073, y=1599	
Pixel	x=699, y=2062	=
Pixel	x=1510, y=2515	
Pixel	x=1936, y=2215	
Pixel	x=2778, y=1120	
Pixel	x=1605, y=715	
Pixel	x=1836, y=1720	
Pixel	x=2583, y=2062	
Pixel	x=2362, y=2615	
V-Line	x=1783, y1=431, y2=1252	-
	Delete	

- Apply: Apply Defect information of selected items from the list to image.
- All: Apply all items from the list.
- Selected: Apply the only selected items from the list.
- Delete: Delete the selected items from the list.



Operation / Zoom control

Operation												n ri	Zoom cont	rol
Get Bad Pixel	Add Pixel	Add V-Line	Add H-Line	Delete Pixel	Delete V-Line	Delete H-Line	Zoom	W/L	Pan	💙 Show	ROI		1:1	Fit

• Get Bad Pixel: Automatically detect the defect pixel from the currently displayed image.



When you select the **Get Bad Pixel** feature, all items of the Defect info marking list are automatically applied to the image.

Pi	xel List		×	Γ
	x	Y	Value	
	Threshold:	3 %	Offset: 0	
	Se	arch	Add	

- 1 Enter the value of threshold and offset to detect the defect pixel.
- 2 Click the **Search** button to search the automatically detected list.





- 3 Select an item to add to the Defect list, and then click the **Add** button.
 - Add Pixel: Add one pixel unit of defect pixel.
 - Add V-Line: Add line type of defect pixels vertically.
 - Add H-Line: Add line type of defect pixels horizontally.
 - Delete Pixel: Delete one pixel unit of defect pixel.
 - Delete V-Line: Delete line type of defect pixels vertically.
 - Delete H-Line: Delete line type of defect pixels horizontally.
 - Zoom: Zoom in or out the image.
 - W/L: Adjust the window level of the image.
 - Pan: Move the image.
 - Show: Determine whether to display the selected defect pixel on the image.
 - ROI: Automatically adjust the window level based on the Min. and Max. value of the selected area.
 - 1:1: Display the image at one to one ratio.
 - Fit: Display the image to fit into the screen.
- 4 Once it is finished to display the defect pixels in the image, save the newly created defect map file and complete the process by clicking the **Save and close** button. To cancel it, click the **Close** button.



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5.4.4 Gain Pixel Correction

Before performing Gain Pixel Correction, consider followings:

- Recommended SID is 150 cm (distance between X-ray tube and Detector).
- Open the collimator of X-ray tube completely.
- Align the center of the detector with the center of collimator.
- Keep everything away from the detector surface.
- Select Gain acquisition Normal in the left Step item. Expose X-rays and adjust dose of X-rays so that Current Value reaches TargetValue. Keep the quantity of X-rays when Current Value remains within 10% difference of TargetValue.



Recommended TargetValue is 2000.

Char.	Status	Gain calibration
Step System configuration Offset Calibration - Normal Defect Calibration - Normal Gain Calibration - Normal	Done Done	Target/alue : 2000 Current Value :
Detector configuration		Stage : of 10 Get Cancel Load gain Gain path : N/A
ОК	Cancel	

- 2 Click the **Get** button and expose X-rays ten times.
- 3 Save the Gain data to the desired folder.
- 4 Once all the procedures are completed, the OK button will be activated. Click the **OK** button to close the dialog box.



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5.4.5 Detector Preference

Step	Status	Detector direction compensation	Preview
System configuration Offset Calibration - Normal Done Defect Calibration - Normal Done Gain Calibration - Normal Done Detector configuration		 © CW 0° / CCW 0° © CW 90° / CCW 270° © CW 180° / CCW 180° © CW 270° / CCW 90° 	
		Effective Area	
		Top: 0 0 pixel Bottom: 3071 0 pixel	
		Left: 0 0 pixel	
		Right : 2559 0 pixel	
		Select Area Show Area	
		Offset refresh setting	
		Pixel ptich calibration	
		0.140 mm 140.0 μm	
		Ruler pixel	
		Set	Pan Zoom W/L Fit
ок	Cancel		

- 1 If you need to rotate the detector, select the value of Detector direction compensation.
- 2 To exclude the particular area of an image, select the desired area by clicking the **Show Area** button after acquiring an image, or click the **Select Area** button after entering the size of image in the **Effective Area** field.
- 3 To renew the automatic offset of the detector, check the **Use offset refresh** checkbox and set time interval, temperature, the number of acquiring images.



Once the **Use offset refresh** checkbox is checked, the temperature of detector is monitored at the time interval specified. If there is difference between the current temperature and the specified one, images are acquired according to the number of acquiring images which you have already set, and then the offset is renewed.

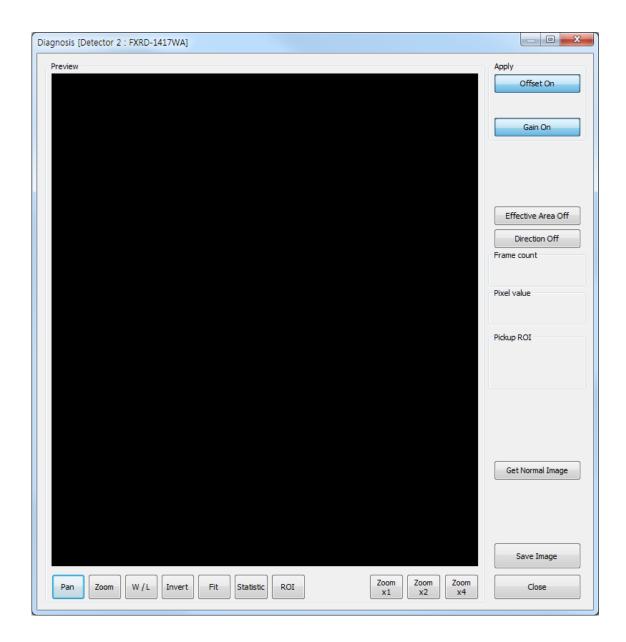
- 4 Click the **Ruler** button after acquiring an image, measure the length of it, and then enter the value.
- 5 Enter all the data you need, and then save the setting by clicking the **Set** button at the bottom.



5.5 Diagnosis Mode

In Diagnosis Mode you can review the images acquired by using the trigger or clicking the **Normal Grab** button. The number of images, pixel value and ROI value will be displayed on the right side of the **Diagnose** window.

Click the **Save Image** button to save the acquired image.





The **Diagnose** window provides the following function buttons to manipulate the acquired image.

•	Pan:	Move an image.
•	Zoom:	Press and hold the left mouse button and then drag to zoom in or out.
•	W/L:	Press and hold the left mouse button and then move the mouse up, down, left or
		down to adjust Window Level. Basically this function is also available by using the
		right mouse button without clicking the W/L button.
•	Fit:	Fit the panned image to the center.
•	Statistic:	Press and hold the left mouse button and then drag to specify a region.
		The coordinates of image, Min/Max value, mean deviation, standard deviation,
		etc will be displayed in the Pickup ROI.
•	ROI:	Press and hold the left mouse button and then drag to specify a region.
		The Window Level will be adjusted automatically based on Min and Max value of
		the region.
Zoo	om ×1 ~ ×16:	Magnify the image $\times 1$ to $\times 16$.



6. Operation



For the detailed operation, refer to the VXvue User Manual.

- 1 Register a patient.
- 2 Register Body parts.
- 3 Arrange the patient in the correct position to have detector aligned with the target body part.
- 4 Position the X-ray generator to adjust the exposure field.
- 5 Adjust kVp, mA, ms and mAs for best condition depending on body part and projection.
- 6 Press the exposure switch of the X-ray generator. You can check the images on the monitor after image processing.





7. Maintenance

7.1 Function Test

ltem	Period	Description
Power consumption	Daily	Confirm that the power operation of detector is normal.
Temperature	Daily	Check the monitoring in order to minimize the characteristic
		changes of Flat panel caused by external temperature changes.
Hard disk space	Deily	Check if the hard disk is enough to save images and allow the
	Daily	consecutive shootings.
Worklist connection	Daily	Check the worklist connection to allow consecutive shootings.
PACS server connection	Daily	Check the PACS server connection to send images.
Printing Test	Daily	Check the printer connection and print images
Auto offset	Daily	Check that Flat panel's offset changes caused by the increased
		heat are automatically corrected.
Resolution	Monthly	Confirm the resolution of the detector.
Image Acquisition Time	Monthly	Confirm the acquisition of time required to get image designed
		with optimal specifications.
Linearity	Quarterly	Evaluate the distinct characteristics of detector through the
		amount of radiation coming into Flat Panel Detector, resolution
		and contrast of images/projections, and the unification of noises
		of projection.
DQE	Quarterly	Evaluate the distinct characteristics of detector through the
		amount of radiation coming into Flat Panel Detector, resolution
		and contrast of images/projections, and the unification of noises
		of projection.
MTF	Quarterly	Evaluate the distinct characteristics of detector through the
		amount of radiation coming into Flat Panel Detector, resolution
		and contrast of images/projections, and the unification of noises
		of projection.
Calibration	Annually	Compensates defect pixels and calibrates pixel gain using the
		installed X-ray generator and X-ray tube.



7.2 Maintenance Guidelines for Users and Test Forms

Maintenance

If you have any inquiries about trouble shooting or the product seems to have a problem, please contact Vieworks. For optimal performance, we recommend that the working area be kept clean.



Federal law restricts this device to be dealt or operated by a physician or medical assistant.

Contact Information

Address:	Vieworks Co., Ltd
	#107-108, 601-610 Suntechcity II
	52, Sagimakgol-ro (307-2 Sangdaewon-dong),
	Jungwon-gu, Seongnam-si, Gyeonggi-do
	462-806 South Korea
Phone:	+82-70-7011-6161
Fax:	+82-31-737-4954
email:	vieworks@vieworks.com

Cleaning

Use a dry cloth to clean surfaces of the system. Do not use detergents or organic solvents to clean the system.



Do not use abrasive brush, scraper, or acid/alkaline cleaner when cleaning your product.



Test Forms

	Power Consum	otion						
Test ITEM (1)	Frequency	D: Daily	M: Monthly					
		Q: Quarterly	A: Annually					
Objective:								
Confirm that the power operation	n of detector is nor	mal.						
Equipment:								
Workstation, VXvue S/W								
Power supply, Power Meter								
Inspection Report Form,								
Procedure:								
Turn on the power of the syster	n.							
Run VXvue.								
Read the data indicated by Pow	ver Meter.							
Performance and Corrective	Action							
Power Consumption of Max. 20								
Light green colored LED should								
If the power consumption excee		nit. service assistance	e is necessarv.					
If the LED is not turned on, serv								
Record result on Inspection Re		,						
Result:								
Frequency: D: \Box , M: \Box , Q: \Box ,	Frequency: D: onumber d. M: onumber d. Q: onumber d. A: onumber date: 20**-**- Operator:							
Limit of Acceptability: Max. 200	VA							
Remarks:								



	Temperature			
Test ITEM (2)	Frequency	D: Daily	M: Monthly	
		Q: Quarterly	A: Annually	
Objective:				
Check the monitoring in order to minimize the characteristic changes of Flat panel caused by external				
temperature changes.				
Equipment:				
Workstation, VXvue S/W				
Power supply, Power Meter				
Inspection Report Form				
Procedure:				
Turn on the power of the system.				
Run VXvue.				
Check the temperature.				
Performance and Corrective Action:				
Confirm that the detector and ambient temperature is lower or higher than the operating temperature stated				
in this Service Manual. If the detector and ambient temperature deviates from the operating range, adjust				
the detector and ambient temperature properly to prevent poor image quality. If the image quality is reduced				
after adjusting the temperature, service assistance is necessary.				
Record result on Inspection Report Form.				
Result:				
Frequency: D: \Box , M: \Box , Q: \Box ,	A: Date: 20	**-**- Ope	erator:	
Limit of Acceptability: +10 ~ +35℃				
Remarks:				



	Hard Disk free space				
Test ITEM (3)	Frequency	D: Daily		M: Monthly	
		Q: Quarterly		A: Annually	
Objective:					
Confirm that new study can be p	performed and stored	to hard disk dri	ive of	workstation.	
Equipment:					
Workstation, VXvue S/W					
Power supply, Power Meter					
Inspection Report Form					
Procedure:					
Turn on the power of the system					
Run VXvue.					
Check hard disk free space indic	cation is not red light.				
Performance and Corrective A					
If the hard disk free space indica					
If the hard disk free space indica	ation is red, delete old	study to make	free	hard disk space	enough to
perform new study.					
Record result on Inspection Rep	ort Form.				
Result:					
Frequency: D: \Box , M: \Box , Q: \Box ,	A: □ Date: 20	**_**_**	Oper	ator:	
Limit of Acceptability: N/A					
Remarks:					



Test ITEM (4) Frequency D: Daily M: Monthly Display M: Monthly Display <t< th=""><th></th><th colspan="5">Work list connection</th></t<>		Work list connection				
Objective: Confirm that VXvue is connected normally with Worklist and can register study by querying from Worklist server. Equipment: Workstation, VXvue S/W, Work List Server Power supply, Power Meter Inspection Report Form Procedure: Turn on the power of the system. Run VXvue. Select Setting Mode. Select DICOM tab. Select MWL tab. Select Worklist server. Click the Echo button. Performance and Corrective Action: Chonection status that is displayed in test result window. If connection test failed, check Worklist server is operating and configuration of Worklist server connection is correct. If still Worklist connection fails, service assistance is necessary. Result: Frequency: D: D, M: D, Q: D, A: D Date: 20****** Operator: Limit of Acceptability: N/A Date: 20****** Operator:	Test ITEM (4)	Frequency	D: Daily	M: Monthly D		
Confirm that VXvue is connected normally with Worklist and can register study by querying from Worklist server. Equipment: Workstation, VXvue S/W, Work List Server Power supply, Power Meter Inspection Report Form Procedure: Turn on the power of the system. Run VXvue. Select Setting Mode. Select DICOM tab. Select DICOM tab. Select Worklist server. Click the Echo button. Performance and Corrective Action: Check the connection status that is displayed in test result window. If connection test failed, check Worklist server is operating and configuration of Worklist server connection is correct. If still Worklist connection fails, service assistance is necessary. Record result on Inspection Report Form. Result: Frequency: D:M:Q:A: Date: 20**_*** Operator: Limit of Acceptability: N/A			Q: Quarterly	A: Annually		
server. Equipment: Workstation, VXvue S/W, Work List Server Power supply, Power Meter Inspection Report Form Procedure: Turn on the power of the system. Run VXvue. Select Setting Mode. Select DICOM tab. Select DICOM tab. Select MWL tab. Select Worklist server. Click the Echo button. Performance and Corrective Action: Check the connection status that is displayed in test result window. If connection test failed, check Worklist server is operating and configuration of Worklist server connection is correct. If still Worklist connection fails, service assistance is necessary. Record result on Inspection Report Form. Result: Frequency: D: □, M: □, Q: □, A: □ Date: 20**-*** Operator: Limit of Acceptability: N/A	Objective:		·			
Equipment: Workstation, VXvue SW, Work List Server Power supply, Power Meter Inspection Report Form Procedure: Turn on the power of the system. Run VXvue. Select Setting Mode. Select Setting Mode. Select MWL tab. Select Worklist server. Click the Echo button. Performance and Corrective Action: Check the connection status that is displayed in test result window. If connection test failed, check Worklist server is operating and configuration of Worklist server connection is correct. If still Worklist connection fails, service assistance is necessary. Record result on Inspection Report Form. Result: Frequency: D: n, M: n, Q: n, A: n Date: 20**-**-** Operator: Limit of Acceptability: N/A	Confirm that VXvue is connected	d normally with Work	list and can registe	r study by querying from Worklist		
Workstation, VXvue S/W, Work List Server Power supply, Power Meter Inspection Report Form Procedure: Turn on the power of the system. Run VXvue. Select Setting Mode. Select DICOM tab. Select MWL tab. Select Worklist server. Click the Echo button. Performance and Corrective Action: Check the connection status that is displayed in test result window. If connection test failed, check Worklist server is operating and configuration of Worklist server connection is correct. If still Worklist connection fails, service assistance is necessary. Record result on Inspection Report Form. Result: Frequency: D: □, M: □, Q: □, A: □ Date: 20**-**-** Virtual of Acceptability: N/A	server.					
Workstation, VXvue S/W, Work List Server Power supply, Power Meter Inspection Report Form Procedure: Turn on the power of the system. Run VXvue. Select Setting Mode. Select DICOM tab. Select MWL tab. Select Worklist server. Click the Echo button. Performance and Corrective Action: Check the connection status that is displayed in test result window. If connection test failed, check Worklist server is operating and configuration of Worklist server connection is correct. If still Worklist connection fails, service assistance is necessary. Record result on Inspection Report Form. Result: Frequency: D: □, M: □, Q: □, A: □ Date: 20**-**-** Virtual of Acceptability: N/A						
Power supply, Power Meter Inspection Report Form Procedure: Turn on the power of the system. Run VXvue. Select Setting Mode. Select DICOM tab. Select MWL tab. Select Worklist server. Click the Echo button. Performance and Corrective Action: Check the connection status that is displayed in test result window. If connection test failed, check Worklist server is operating and configuration of Worklist server connection is correct. If still Worklist connection fails, service assistance is necessary. Record result on Inspection Report Form. Result: Frequency: D: □, M: □, Q: □, A: □ Date: 20**-**. Operator: Limit of Acceptability: N/A	Equipment:					
Inspection Report Form Procedure: Turn on the power of the system. Run VXvue. Select Setting Mode. Select DICOM tab. Select MWL tab. Select Worklist server. Click the Echo button. Performance and Corrective Action: Check the connection status that is displayed in test result window. If connection test failed, check Worklist server is operating and configuration of Worklist server connection is correct. If still Worklist connection fails, service assistance is necessary. Record result on Inspection Report Form. Result: Frequency: D: □, M: □, Q: □, A: □ Date: 20**-**.** Operator: Limit of Acceptability: N/A	Workstation, VXvue S/W, Work	List Server				
Procedure: Turn on the power of the system. Run VXvue. Select Setting Mode. Select DICOM tab. Select MWL tab. Select Worklist server. Click the Echo button. Performance and Corrective Action: Check the connection status that is displayed in test result window. If connection test failed, check Worklist server is operating and configuration of Worklist server connection is correct. If still Worklist connection fails, service assistance is necessary. Record result on Inspection Report Form. Result: Frequency: D: □, M: □, Q: □, A: □ Date: 20**-**-** Uption of Acceptability: N/A	Power supply, Power Meter					
Turn on the power of the system. Run VXvue. Select Setting Mode. Select DICOM tab. Select MWL tab. Select Worklist server. Click the Echo button. Performance and Corrective Action: Check the connection status that is displayed in test result window. If connection test failed, check Worklist server is operating and configuration of Worklist server connection is correct. If still Worklist connection fails, service assistance is necessary. Record result on Inspection Report Form. Result: Frequency: D: □, M: □, Q: □, A: □ Date: 20**_*** Operator: Limit of Acceptability: N/A	Inspection Report Form					
Turn on the power of the system. Run VXvue. Select Setting Mode. Select DICOM tab. Select MWL tab. Select Worklist server. Click the Echo button. Performance and Corrective Action: Check the connection status that is displayed in test result window. If connection test failed, check Worklist server is operating and configuration of Worklist server connection is correct. If still Worklist connection fails, service assistance is necessary. Record result on Inspection Report Form. Result: Frequency: D: □, M: □, Q: □, A: □ Date: 20**-**. Operator: Limit of Acceptability: N/A						
Run VXvue. Select Setting Mode. Select DICOM tab. Select MWL tab. Select Worklist server. Click the Echo button. Performance and Corrective Action: Check the connection status that is displayed in test result window. If connection test failed, check Worklist server is operating and configuration of Worklist server connection is correct. If still Worklist connection fails, service assistance is necessary. Record result on Inspection Report Form. Result: Frequency: D: D, M: D, Q: D, A: D Date: 20**_**_** Uprime of Acceptability: N/A	Procedure:					
Select Setting Mode. Select DICOM tab. Select MWL tab. Select Worklist server. Click the Echo button. Performance and Corrective Action: Check the connection status that is displayed in test result window. If connection test failed, check Worklist server is operating and configuration of Worklist server connection is correct. If still Worklist connection fails, service assistance is necessary. Record result on Inspection Report Form. Result: Frequency: D: □, M: □, Q: □, A: □ Date: 20**_*** Operator: Limit of Acceptability: N/A	Turn on the power of the system	1.				
Select DICOM tab. Select MWL tab. Select Worklist server. Click the Echo button. Performance and Corrective Action: Check the connection status that is displayed in test result window. If connection test failed, check Worklist server is operating and configuration of Worklist server connection is correct. If still Worklist connection fails, service assistance is necessary. Record result on Inspection Report Form. Result: Frequency: D: □, M: □, Q: □, A: □ Date: 20**_** Operator: Limit of Acceptability: N/A	Run VXvue.					
Select MWL tab. Select Worklist server. Click the Echo button. Performance and Corrective Action: Check the connection status that is displayed in test result window. If connection test failed, check Worklist server is operating and configuration of Worklist server connection is correct. If still Worklist connection fails, service assistance is necessary. Record result on Inspection Report Form. Result: Frequency: D:	Select Setting Mode.					
Select Worklist server. Click the Echo button. Performance and Corrective Action: Check the connection status that is displayed in test result window. If connection test failed, check Worklist server is operating and configuration of Worklist server connection is correct. If still Worklist connection fails, service assistance is necessary. Record result on Inspection Report Form. Result: Frequency: D: D, M: D, Q: D, A: D Date: 20**_**_ Operator: Limit of Acceptability: N/A	Select DICOM tab.					
Click the Echo button. Performance and Corrective Action: Check the connection status that is displayed in test result window. If connection test failed, check Worklist server is operating and configuration of Worklist server connection is correct. If still Worklist connection fails, service assistance is necessary. Record result on Inspection Report Form. Result: Frequency: D: , M: , Q: , A: Date: 20**_**_* Operator: Limit of Acceptability: N/A	Select MWL tab.					
Performance and Corrective Action: Check the connection status that is displayed in test result window. If connection test failed, check Worklist server is operating and configuration of Worklist server connection is correct. If still Worklist connection fails, service assistance is necessary. Record result on Inspection Report Form. Result: Frequency: D: □, M: □, Q: □, A: □ Date: 20**_**_ Operator: Limit of Acceptability: N/A	Select Worklist server.					
Check the connection status that is displayed in test result window. If connection test failed, check Worklist server is operating and configuration of Worklist server connection is correct. If still Worklist connection fails, service assistance is necessary. Record result on Inspection Report Form. Result: Frequency: D: D, M: D, Q: D, A: D Date: 20**-**- Operator: Limit of Acceptability: N/A	Click the Echo button.					
Check the connection status that is displayed in test result window. If connection test failed, check Worklist server is operating and configuration of Worklist server connection is correct. If still Worklist connection fails, service assistance is necessary. Record result on Inspection Report Form. Result: Frequency: D: D, M: D, Q: D, A: D Date: 20**-**- Operator: Limit of Acceptability: N/A						
If connection test failed, check Worklist server is operating and configuration of Worklist server connection is correct. If still Worklist connection fails, service assistance is necessary. Record result on Inspection Report Form. Result: Frequency: D: □, M: □, Q: □, A: □ Date: 20**-**- Operator: Limit of Acceptability: N/A	Performance and Corrective A	Action:				
is correct. If still Worklist connection fails, service assistance is necessary. Record result on Inspection Report Form.	Check the connection status that	t is displayed in test	result window.			
If still Worklist connection fails, service assistance is necessary. Record result on Inspection Report Form. Result: Frequency: D: □, M: □, Q: □, A: □ Date: 20**-**- Operator: Limit of Acceptability: N/A	If connection test failed, check V	Vorklist server is ope	rating and configura	ation of Worklist server connection		
Record result on Inspection Report Form. Result: Frequency: D: □, M: □, Q: □, A: □ Date: 20**-**- Operator: Limit of Acceptability: N/A	is correct.					
Result: Frequency: D: □, M: □, Q: □, A: □ Date: 20**-**- Operator: Limit of Acceptability: N/A	If still Worklist connection fails, s	service assistance is	necessary.			
Frequency: D: □, M: □, Q: □, A: □ Date: 20**-** Operator: Limit of Acceptability: N/A	Record result on Inspection Rep	oort Form.				
Frequency: D: □, M: □, Q: □, A: □ Date: 20**-** Operator: Limit of Acceptability: N/A						
Limit of Acceptability: N/A						
	Frequency: D: \Box , M: \Box , Q: \Box ,	A: Date: 2	0**-**- Ope	erator:		
Remarks:	Limit of Acceptability: N/A					
Remarks.	Demorkey					



Г

	PACS Server connection				
Test ITEM (5)	Frequency	D: Daily	M: Monthly		
		Q: Quarterly	A: Annually		
Objective:					
Confirm that VXvue is connected	d normally with PACS	Server and can se	end performed study data to PA	CS	
server.					
Equipment:					
Workstation, VXvue S/W, PACS	Server				
Power supply, Power Meter					
Inspection Report Form					
Procedure:					
Turn on the power of the system	1.				
Run VXvue.					
Select Setting Mode.					
Select DICOM tab.					
Select Storage tab.					
Select Storage Server.					
Click the Echo button.					
Performance and Corrective					
Check the connection status that					
If connection test failed, check F	ACS server is operat	ing and configurati	on of PACS server connection is	S	
correct.					
If still PACS server connection fa		e is necessary.			
Record result on Inspection Rep	oort Form.				
Result:					
Frequency: D: , M: , Q: ,	A: Date: 20)**-**- Ope	erator:		
Limit of Acceptability: N/A					
Demostre					
Remarks:					



	Printing Test	
Test ITEM (6)	Frequency	D: Daily ■ M: Monthly □
		Q: Quarterly A: Annually
Objective:		
Confirm that VXvue is connected	d normally with Printe	er and can print images.
Equipment:		
Workstation, VXvue S/W,		
DICOM Printer or Paper Printer	that is installed.	
Power supply, Power Meter		
Inspection Report Form		
Procedure:		
Turn on the power of the system	1.	
Run VXvue.		
Select Database Mode.		
Search database and open stud	у.	
Click the Print button.		
Select Print Mode.		
Click the Print button to print ima	age.	
Performance and Corrective	Action:	
Confirm that the image is printed	d normally.	
If printing failed, check the printe	er is operating and is	configured correctly.
If still printing fail, service assista	ance is necessary.	
Record result on Daily Report F	orm.	
Result:		
Frequency: D: \Box , M: \Box , Q: \Box ,	A: Date: 2	0**-**_** Operator:
Limit of Acceptability: N/A		
Remarks:		



	Auto offset		
Test ITEM (7)	Frequency	D: Daily	M: Monthly
		Q: Quarterly	A: Annually
Objective:			
Check that Flat panel's offset ch	anges caused by the	increased heat are a	utomatically corrected.
Equipment:			
Workstation, VXvue S/W			
Power supply, Power Meter			
Stop watch			
Inspection Report Form			
Procedure:			
Turn on the power of the system).		
Run VXSetup.			
Set the period of offset or tempe	erature change.		
Run VXvue.			
Performance and Corrective A	action:		
Check if Auto offset is set and pe	erformed when operation	ting VXvue.	
Check if Auto offset operates aft	er the chosen time se	tting is over.	
If offset is not set automatically a	and does not perform,	ask for service assis	stance.
If the chosen time setting is exce	eeded, recheck the tir	ne setting.	
If the image is not normal due to	the dislocation of off	set, send the image a	and ask for service assistance.
Record result on Inspection Rep	oort Form.		
Result:			
Frequency: D: \Box , M: \Box , Q: \Box ,	A: Date: 20)**-**- Opera	itor:
Limit of Acceptability: N/A			
Remarks:			



	Resolution				
Test ITEM (8)	Frequency	D: Daily □ M: Monthly ■			
		Q: Quarterly A: Annually			
Objective:					
Confirm the resolution of the det	ector.				
Equipment:					
Workstation, VXSetup S/W					
Power supply, Power Meter					
Resolution Chart (Nuclear Assoc	ciate, model 07-52	3-2 or Line pair CHART 0.05mmPb CN37076)			
X-ray GEN., X-ray Tube					
Inspection Report Form					
Procedure:					
Turn on the power of the system					
Run VXSetup.					
Open the Diagnose window.					
Attach resolution chart (Line pair	CHART 0.05 mm F	b CN37076, model 07-523-2) on the center of the			
detector with diagonal direction.					
Set X-ray generator to 50kVp, 2	mAs and SID to 1r	n.			
Expose X-rays.					
Confirm that the resolution is over	er 3.51p/mm.				
Performance and Corrective A	ction:				
Confirm that the resolution is over	er 3.51p/mm.				
If the resolution is under 3.5lp/mm	i, then test again b	y adjusting mAs from 1mAs to 5mAs.			
If still resolution is under 3.5lp/mr	n, service assistan	ce is necessary.			
Record result on Inspection Rep	ort Form.				
Result:					
Frequency: D: \Box , M: \Box , Q: \Box ,	A: Date	20**-**- Operator:			
Limit of Acceptability: 3. 5lp/mm					
Remarks:					



	Image Acquisition	Time		
Test ITEM (9)	Frequency	D: Daily	M: Monthly	
		Q: Quarterly	A: Annually	
Objective:				
Confirm the acquisition of time r	equired to get image o	designed with optin	nal specifications.	
Equipment:				
Workstation, VXvue S/W				
Power supply, Power Meter				
X-ray GEN., X-ray Tube				
Stop watch				
Inspection Report Form				
Procedure:				
Turn on the power of the system	1.			
Run VXvue.				
Select Exposure Mode.				
Register patient.				
Expose X-rays with the condition	n of 50kVp and 5 mAs			
Check flat Image is acquired and	d displayed on monito	r.		
Performance and Corrective A	Action:			
Check if the image is acquired in	n 5 to 7 seconds (inclu	iding the processir	ng time).	
If image acquisition failed, check	the X-ray is exposed	normally and the	triggering with X-ra	ay generator is
properly configured.				
If still image acquisition fail, serv	vice assistance is nece	essary.		
Record result on Inspection Rep	oort Form.			
Result:				
Frequency: D:	A: Date: 20	**-**- Ope	erator:	
Limit of Acceptability:5~7 sec				
Remarks:				



	Linearity			
Test ITEM (10)	Frequency	D: Daily	M: Monthly	
		Q: Quarterly	A: Annually	
Objective:				
Evaluate the image quality acco	rding to the amount of	radiation coming	into Flat Panel D	etector.
Equipment:				
Workstation, VXvue S/W				
Power supply, Power Meter				
X-ray GEN., X-ray Tube				
Inspection Report Form				
Procedure:				
No Target				
Gain: 1				
Performance and Corrective A	ction:			
When SID is 150 cm, 1900-2200	Graylevel properties/	qualities should be	e obtained under	70kVp and 2mAs.
When SID is 100 cm, 1900-2200	Graylevel properties/	qualities should be	e obtained under	55kVp and 2mAs.
If properties/qualities are not obt	tained, reset the condi	tions and test aga	ain.	
If properties/qualities are still not	t obtained after the se	cond test, service	assistance is neo	cessary.
Record result on Inspection Rep	oort Form.			
Result:				
Frequency: D:	A: Date: 20	**-**- Op	erator:	
Limit of Acceptability: SID: 150 c	m, 70kVp, 2mAs → 1	900 ~ 2200 Grayl	evel	
SID: 100 c	cm, 55kVp, 2mAs → 1	900 ~ 2200 Grayl	evel	
Remark:				



	DQE				
Test ITEM (11)	Frequency	D: Daily		M: Monthly	
		Q: Quarterly		A: Annually	
Objective:					
Evaluate the distinct character	istics of detector throug	h the amount of	f rac	diation coming in	nto Flat Panel
Detector, resolution and contra	ast of images/projectior	s, and the unific	atio	n of noises of p	rojection.
Equipment:					
Workstation, VXvue S/W					
Power supply, Power Meter					
X-ray GEN., X-ray Tube					
Inspection Report Form					
Procedure:					
IEC62220-1(RQA 5) in accord	ance with the condition	S			
	•				
Performance and Corrective			4 -		
In case of CSI type, properties	•				
In case of Gadox type, proper					
If properties/qualities are not of			-		
If properties/qualities are still r		econd test, servic	ce a	issistance is neo	cessary.
Record result on Inspection R	eport Form.				
Result:					
Frequency: D: , M: , Q:	□, A: □ Date: 20)**_**_**)nei	rator:	
	, / Duto. 2.	,	, poi		
Limit of Acceptability: CSI:	1l/p mm, more than 4	5%			
Gadox:	11/p mm, more than 3				
	, more than of				
Remarks:					



	MTF				
Test ITEM (12)	Frequency	D: Daily		M: Monthly	
		Q: Quarterl	у ∎	A: Annually	
Objective:					
Evaluate the distinct characterist	tics of detector throug	h the amount	t of ra	diation coming i	into Flat Panel
Detector, resolution and contrast	of images/projection	s, and the un	ificatio	on of noises of p	projection.
Equipment:					
Workstation, VXvue S/W					
D.Q.E Program (Matlab)					
Power supply, Power Meter					
X-ray GEN., X-ray Tube					
Inspection Report Form					
Procedure:					
IEC62220-1(RQA 5) in accordan	ce with the condition	S			
Performance and Corrective A	ction:				
Properties/qualities should be ob		% at 11/p mm			
If properties/qualities are not obtained, reset the conditions and test again.					
If properties/qualities are still not			-		cessarv
Record result on Inspection Rep					
Result:					
Frequency: D: , M: , Q: ,	A: Date: 20)**-**-**	Ope	rator:	
Limit of Acceptability: 11/p mm, me	ore than 50%				
Remarks:					



	Calibration		
Test ITEM (13)	Frequency	D: Daily D: M: Monthly	
		Q: Quarterly A: Annually	•
Objective:			
Compensates defect pixels and	calibrates pixel gain u	sing the installed x-ray generator	r and x-ray tube.
Equipment:			
Workstation, VXSetup S/W			
Power supply, Power Meter			
X-ray GEN., X-ray Tube			
Inspection Report Form			
Procedure:			
Turn on the power of the system	l.		
Run VXSetup.			
Operation of calibration: Enter 1	-		
Operation of calibration: Enter 1	-	offset and perform the calibration	
Operation of calibration: Perform			
Operation of calibration: Perform	n Gain correction.		
Performance and Corrective A			
Featured artifacts are not found	•	ned normally.	
If many artifacts are found, perfo	-		
If many artifacts are still found, s		ecessary.	
Record result on Inspection Rep	ort Form.		
Result:			
Frequency: D:	A: Date: 20	(*-**-** Operator:	
Limit of Accortability NI/A			
Limit of Acceptability: N/A			
Remarks:			



System Discrepancy Form

Installation Site Information:
Date: Published by:
System Information
X-ray Generator:
X-ray Tube:
X-ray grid Information:
Detector Model: FXRD-1417WA(B)
Serial Number of Detector:
Serial Number of Power Supply Unit:
Version of VXvue:
Version of VXSetup:
Comment:
System Discrepancy
Date of finding:
Operator:
How is it found:
Comment:

Contact Information

Vieworks Co., Ltd				
#107-108, 601-610 Suntechcity II,				
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vieworks@vieworks.com				



VIVIX-S Wireless Service Manual

Modification Request Form

Date:	Published by:
System Information	
X-ray Generator:	
X-ray Tube:	
X-ray grid Information:	
Detector Model: FXRD-1417WA(B)	
Serial Number of Detector:	
Serial Number of Power Supply Unit:	
Version of VXvue:	
Version of VXSetup:	
Comment:	
Modification Request	
Software Name:	
Request:	
Comment:	

Contact Information

Address:	Vieworks Co., Ltd			
	#107-108, 601-610 Suntechcity II,			
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email:	vieworks@vieworks.com			



8. Troubleshooting



Trouble shooting must be performed by technician who is trained by the Vieworks Co., Ltd or an organization certified by Vieworks Co., Ltd. If an unqualified person performs troubleshooting on the system resulting in damaging the detector, software or hardware, then the Vieworks Co., Ltd or its representative is not responsible for the detector repair regardless of remain warranty. For more detailed information, refer to the 9. Warranty section.

8.1 Failure Case

Failure Case	Solution
Failed to turn on the power of SCU.	Refer to 8.1.1
Power LED isn't lit up.	Refer to 8.1.2
Status LED isn't lit up with green.	Refer to 8.1.3
Communication Test Failure	Refer to 8.1.4

8.1.1 Repairing SCU

Check if AC power cable of System Control Unit is securely plugged. If it still does not work, replace the SCU.

8.1.2 Repairing Power Failure

Check if DC power cable is securely plugged and power switch is turned on. If it still does not work, replace the detector.

8.1.3 Configuration Failure

Turn off the SCU and turn it on again. If it still does not work, replace the detector.

8.1.4 Repairing Communication Failure

Check if LAN cable is securely plugged. If it does not work, do the first step of the following and check again. If it still does not work, do the next step.

- Restart VXvue.
- Turn off the SCU and turn it on again.
- Replace the LAN cable.



9. Warranty

Vieworks Co., Ltd warrants that this product will be free from defects in materials and workmanship for a period of twelve (12) months from the date of delivery. If any such product proves defective during this warranty period, Vieworks Co., Ltd at its option, either will repair the defective product without charge for parts and labor, or will provide a replacement in exchange for the defect product. In order to obtain service under this warranty, Customer must notify Vieworks Co., Ltd of the defect before the expiration of the warranty period and make suitable arrangements for the performance of service. Customer shall be responsible for packaging and shipping the defective product to the service center designated by Vieworks Co., Ltd with shipping charges prepaid. Vieworks Co., Ltd shall pay for the return of the product to customer if the shipment is to a location within the country in which the Vieworks Co., Ltd designated service center is located. Customer shall be responsible for paying all shipping charges, duties, taxes, and any other charges for products returned to any other locations.

This warranty shall not apply to any defect, failure, or damage caused by improper or inadequate maintenance and care. Vieworks shall not be obligated to furnish service under this warranty to repair damage resulting from attempts by personnel other than Vieworks Co., Ltd or its representatives to install, repair, or service this product, to repair damage resulting from improper use or connection to incompatible equipment or power source; or to service a product that has been modified or integrated with other products when the effect of such modification or integration increases the time or difficulty of servicing the product.

THIS WARRANTY IS GIVEN BY VIEWORKS CO., LTD WITH RESPECT TO THIS PRODUCT IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED. VIEWORKS CO., LTD AND ITS VENDOR DISCLAIM ANY IMPLIED WARRANTIES OF MERCHANTABLILITY OR FITNESS FOR A PARTICULAR PURPOSE. VIEWORKS CO., LTD RESPONSIBILITY TO REPAIR OR REPLACE DEFECTIVE PRODUCTS IS THE SOLE REMEDY PROVIDED TO THE CUSTOMER FOR BREACH OF THIS WARRANTY. VIEWORKS AND ITS VENDORS WILL NOT BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES IRRESPECTIVE OF WHETHER VIEWORKS CO., LTD OR THE VENDOR HAS ADVANCE NOTICE OF THE POSSIBILITY OF SUCH DAMAGES.

There are no warranties which extend beyond the description mentioned in this document.



Vieworks



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FCC/IC Notice

*5.15- 5.25 GHz band is restricted to indoor operations only.

*Host device of the approved module shall be marked with the following item: Contains Transmitter Module FCC ID: RYK-WPEA121N Contains IC Number: 6158A-WPEA121NW

Compliance with FCC requirement 15.407(c)

Data transmission is always initiated by software, which is the passed down through the MAC, through the digital and analog baseband, and finally to the RF chip. Several special packets are initiated by the MAC. These are the only ways the digital baseband portion will turn on the RF transmitter, which it then turns off at the end of the packet. Therefore, the transmitter will be on only while one of the aforementioned packets is being transmitted. In other words, this device automatically discontinues transmission in case of either absence of information to transmit or operational failure.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux la partie 15 des règles de la FCC et CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

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

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

This radio transmitter (identify the device by certification number, or model number if Category II) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Le présent émetteur radio (identifier le dispositif par son numéro de certification ou son numéro de modèle s'il fait partie du matériel de catégorie I) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

FCC CAUTION

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.

When installing it in a mobile equipment

This equipment complies with FCC/IC radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines and RSS-102 of the IC radio frequency (RF) Exposure rules. This equipment has very low levels of RF energy that it deemed to comply without maximum permissive exposure evaluation (MPE). But it is desirable that it should be installed and operated keeping the radiator at least 20cm or more away from person's body in normal use position.

Cet équipement est conforme aux limites d'exposition aux rayonnements énoncées pour un environnement non contrôlé et respecte les règles les radioélectriques (RF) de la FCC lignes directrices d'exposition et d'exposition aux fréquences radioélectriques (RF) CNR-102 de l'IC. Cet équipement émet une énergie RF très faible qui est considérée conforme sans évaluation de l'exposition maximale autorisée. Cependant, il est souhaitable qu'il devrait être installé et utilisé en gardant une distance de 20 cm ou plus entre le dispositif rayonnant et le corps en utilisation normale.)

Model	ANT Model	ТҮРЕ	Gain[dBi]	IMPEDANCE
FXRD-1417WA/B	AEi- 2450/5500DP	PCB Antenna	4.66 dBi (2.4GHz) 2.19 dBi (5 GHz)	50
FXRS-03A	JK-450B	Dipole antenna	3.585 dBi (2.4GHz) 2.830 dBi (5 GHz)	50 Ω

<LIST OF ACCEPTABLE ANTENNA(S), MODEL, GAIN, IMPEDANCE>