VIVIX-S 1417W User Manual

CE 0434

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1. Instruction

This section gives basic information of this manual and products with the safety guide.

Document Guide

Intended Use

Product Use Guide

Safety Instruction

Product Usage Guide

1.1 Document Guide

This User Manual explains how to use the **VIVIX-S 1417W Wireless** detector made by Vieworks, X-ray interface unit, and other peripheral equipment. With this user manual, you can install, set and manage the **VIVIX-S 1417W Wireless** detector as well as use its various functions.

1.1.1 Caution

If the user is not fully aquainted with this manual, the product can be malfunctioned or unsuspected problem can be happened due to carelessness. To prevent any medical accidents, the user should fully understand the instructions of this manual before operating this product.

1.1.2 Target

This manual is intended for service enginneers who install and set the **VIVIX-S 1417W Wireless** detector.

1.1.3 Symbols

Before / while using Vieworks' products, follow the safety instructions in this manual along with the warning or caution symbol. It is important for you to read and understand the contents with the following symbol for operating the products safely.

Caution

- This symbol is used to indicate a potentially hazardous situation which may cause death, personal injury or substantial property damage if the instructions are ignored. Be sure to understand the instructions of this symbol for the safe operation.

Information

- This symbol is used to indicate reference and complementary information related to the product. Users should read the instructions of this symbol carefully.

1.1.4 Notations

Bold Types

We applied bold font style to the words which indicated products terms, or the words and sentences which are needed to transmit clear meaning to the customers. This helps you to easily distinguish the words from other technical ones for explaining functions.

1.1.5 Contact Department

For any comments or inquiries regarding this document, contact via email below.

Item	Contents
Department	Customer Support Team in Vieworks
E-mail	CustomerSupport @vieworks.com

1.2 Intended Use

VIVIX-S 1417W Wireless Detector is a digital X-ray imaging solution. It acquires images by exposing X-ray which has been penetrated the human body. When X-ray photons pass through scintillator in the detector, the photons convert to visible ray, and the visible ray is converted to electronic signals through TFT (a-Si). Then the detector digitalizes x-ray images and transfers them to PC (workstation) for radiography diagnostics through the image display monitor. The advanced digital image processing also allows considerably efficient diagnosis, all kinds of information management, and sharing of image information on network.

- This detector is used for the general-purpose diagnostic procedures, and it is intended to replace radiographic film / screen systems.
- This detector is not intended for mammography applications.

1.2.1 Features

- Compatible with a conventional film cassette complying with ISO4090, enables digital radiography diagnosis instead of the existing analog radiography.
- The new sensor with 140 μm of pixel pitch produces high-resolution (approx. 7.9 Mega pixels) digital images.
- As Vieworks provide two types of scintillator (CsI and Gadox), user can choose one of the detectors to use.
- Installed wireless communication by supporting **IEEE 802.11n** to acquire an image without a wired connection in anytime, anywhere.
- Make direct wireless communication with the built-in wireless AP function. (Inside AP™)
- Supports the stable and reliable AED (Auto Exposure Detection) function. (Anytime™)
- Designed as lightweight and thin with portability to allow easy exposure in anytime, anywhere.
- According to the operation environment, extended use of detector can be made by connecting a tether interface cable with the relevant equipment

1.3 Product Use Guide

This chapter provides instructions about the use of product and disposal as well as the liability limit of Vieworks.

1.3.1 Product Usage

1 Only a physician or a legally certified operator should use this product.
2 The equipment should be kept in a safe and operable condition by maintenance personnel.
3 Observe the contents written in this user manual when installing and using this product.
4 Use only specifications of computers and image display monitors recommended by this user manual.
5 Use only the dedicated cables provided with this product.
6 For details about installing and using this product, consult your sales representative or a distributor.

1.3.2 Disclaimer

1 In no event shall Vieworks be liable for damage or loss arising from a fire, earthquake, any intentional or negligent action by users.
2 In no event shall Vieworks be liable for damage or loss arising from any trial usage, or other usage under abnormal conditions.
3 In no event shall Vieworks be liable for personal physical harm or property damage that is sustained when the instructions of this manual are not followed.
4 In no event shall Vieworks be liable for direct or indirect consequential damages arising from the use of this product.
5 In no event shall Vieworks be liable for any damage arising from moving, alteration, inspection or repair by a person other than authorized service engineers.
6 In no event shall Vieworks be liable for loss of image data for any reason.
7 Roentgenography, image processing, image reading, and image data storage must be performed in accordance with the laws of the country or region in which the product is being used.
8 The user is responsible for maintaining the privacy of image data acquired from this product.
9 It is the responsibility of the attending physicians to provide medical care services. Vieworks will not be liable for faulty diagnoses.
10 Specifications, composition, and appearance of this product may change without prior notice.

1.3.3 Product Disposal

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

European Union (and EEA*) only

This symbol indicates that this product is not to be disposed with your household waste, according to the WEEE Directive (2012/19/EC) and your national law.
This product should be handed over to a designated collection point, e.g., on an authorized one-for-one basis when you buy a new similar product or to an authorized collection site for recycling electrical and electronic equipment (EEE). Improper handling of this type of waste could have a negative impact on the environment and human health due to potentially hazardous substances that are generally associated with EEE. At the same time, your cooperation in the correct disposal of this product will contribute to the effective usage of natural resources. For more information on where you can drop off your waste equipment for recycling, please contact your local city office, waste authority, approved WEEE scheme, or your household waste disposal service.

*EEA: Norway, Iceland, and Liechtenstein

1.3.4 Trademarks

The name "Vieworks" and Vieworks logo are registered trademarks of Vieworks.

1.4 Safety Instruction

This product is designed and manufactured to ensure maximum safety of operation and to meet all the safety requirements applicable to electronic medical equipment. Follow these safeguards while using the products. If not, severe personal injury or substantial property damage can be happened. It is important for you to read and understand the contents of this manual before attempting to use the product.

1.4.1 Management and Authority

- The product should be installed, operated, and serviced according to Vieworks maintenance procedures and by personnel from Vieworks or distributor who providing purchase of the Vieworks' product.
- Operation and maintenance should be done in strict compliance with the operation instructions contained in the manual.
- The system, in whole or in part, cannot be modified in any way without prior approval from Vieworks.
- Before authorizing any person to operate the system, verify that the person has read and fully understood the User 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 made and maintained.
- It is important that this User Manual be kept at hand, studied carefully, and reviewed periodically by the authorized operators.
- If a malfunction occurs, do not use this device until qualified personnel corrects the problem.

1.4.2 Power Supply

- Do not operate the equipment using any type of power supply other than the one indicated on the rating label. Otherwise, it may result in a fire or electric shock.
- Do not supply power to more than one piece of equipment using the same AC outlet for this product. Doing so may result in a fire or electric shock.
- Do not connect a multiple portable socket-outlet or extension cord to the system. Doing so may result in a fire or electric shock.
- Always connect the three-core power cord plug to a grounded AC power outlet.
- Be sure to ground the equipment to an indoor grounded connector. Also, be sure to connect all the grounds for the system to a common ground.
- Do not use any power source other than the one provided with this product. Otherwise, a fire or electric shock may be caused due to a leakage.
- The owner should ensure continuous power supply to the system, with voltage and current according to the product specifications. If the system is powered unstably during its operation, we recommend you to install UPS (Uninterrupted Power Supply) to avoid loss of data.

- To make it easy to disconnect the plug at any time, avoid putting any obstacles near the outlet. Otherwise, it may not be possible to disconnect the plug in an emergency.
- Do not place a heavy object such as medical equipment on cables and cords, and do not pull, bend, bundle, or step on them. Doing so may damage their sheath. If you alter them, it may damage the cords which could result in a fire or electric shock.
- Securely plug the power cord into the AC outlet. If contact failure occurs, or if dust/metal objects come into contact with the exposed metal prongs of the plug, fire or electric shock may result.
- Be sure to turn OFF the power to each piece of equipment before connecting or disconnecting the cords. Otherwise, you may get an electric shock that could result in death or serious injury.
- Be sure to hold the plug or connector to disconnect the cord. If you pull the cord, the core wire may be damaged, resulting in a fire or electric shock.
- Do not handle the product with wet hands. You may experience an electric shock that could result in death or serious injury.

1.4.3 Handling

- Never disassemble or modify the equipment. Doing so may result in a fire or electric shock. Also, since the equipment incorporates parts that may cause an electric shock as well as other hazardous parts, touching them may cause death or serious injury.
- Do not connect any equipment which is not specified in this User Manual.
- Do not place anything on surface of the equipment. The object may fall and cause an injury. Also, if metal objects such as needles or clips fall into the equipment, or if liquid is spilled, it may result in a fire or electric shock.
- Do not hit or drop the equipment. It may be damaged if it receives a strong jolt. If the equipment is used without being repaired, it may result in a fire or electric shock.
- Do not place excessive weight on the detector. The internal image sensor may be damaged and it can affect to the image quality.
- Have the patient take a fixed posture and do not let him or her touch parts unnecessarily. If the patient touches connectors or switches, it may result in electric shock or malfunction of the equipment.
- Do not spill liquid or chemicals onto the detector. In cases where the patient is injured, protect the equipment with a disposable covering not allow to come in contact with blood or other body fluids. Otherwise, it may result in a fire or electric shock.
- For safety reasons, be sure to turn OFF the power of the equipment when the inspections indicated in this manual are going to be performed.
- Do not submerge the detector in water.
- Be sure to use the detector on a flat surface so it will not bend. Otherwise, the internal image sensor may be damaged. Be sure to securely hold the detector while using it in upright positions.

- Because the equipment cable is long, take care that cables do not become tangled during use. Also, be careful not to get your feet caught in the cable. It may cause a malfunction of the equipment or injury to the user from tripping over the cable.
- Do not block the ventilation ports of SCU to prevent overheating. Overheating can cause product's malfunctions and damages.

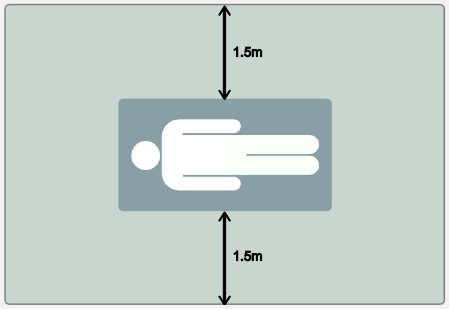
1.4.4 Battery Pack and Charger

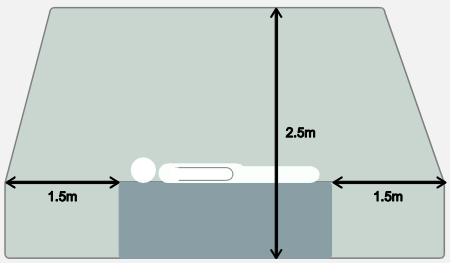
- Do not use the battery pack as a power source for equipment other than VIVIX-S 1417W detectors. Be sure to use only the dedicated battery pack for the VIVIX-S 1417W detector.
- The battery charger is designed for the dedicated battery pack. Do not use the battery charger other than the dedicated one. Otherwise, a battery explosion or a battery leak may occur, resulting in fire or electrical shock.
- Do not operate the battery charger using any type of power supply other than the one indicated on the rating label.
- Do not handle the product with wet hands.
- Do not attempt to disassemble, alter, or apply heat to the product.
- 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.
- Stop using a battery pack if it emits smoke, a strange smell, or behaves abnormally.
- 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.
- Do not clean with substances containing organic solvents such as alcohol, benzene, thinner, or other chemicals. Otherwise, fire or electrical shock may result.
- 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.
- 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.
- 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.
- 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.
- 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.

- Before discarding the battery pack, cover the terminals with adhesive tape or other insulators. Contact with other metal materials may cause fire or explosion.

1.4.5 Environment of Use

- Do not install the equipment in any of the locations listed below. Doing so may result in failure or malfuction, equipment falling, fire, or injury.
  - Close to facilities where water is used.
  - Where it will be exposed to direct sunlight
  - Close to the air outlet of an air-conditioner or ventilation equipment
  - Nearby the electric heating applicance such as a heater
  - Where the power supply is unstable
  - In a dusty environment
  - In a saline or sulfurous environment
  - Where temperature or humidity is higher than the operating temperature
  - Where there is freezing or condensation
  - In areas prone to vibration
  - On an incline or in an unstable area
- 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.
- 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.
- Non-medical devices such as a battery charger, wireless router and **SCU** (System Control Unit) cannot be used in patient's vicinity.





1.4.6 Temperature

- The product is not intended to supply heat to a patient.
- The temperature of contact area with a patient will not be exceeded 48℃ under the normal user environment.
- Do not use the equipment beyond the range of recommended operating temperature.
- Be sure to monitor the internal temperature related to the patient contact area to avoid any adverse effect to the patient.

1.4.7 Problem Management

- Should any of the following occur, immediately turn OFF the power to each piece of equipment, unplug the power cord from the AC outlet, and contact sales representative or distributor.
  - When there is smoke, an odd smell or abnormal sound.
  - When liquid is spilled into the equipment or a metal object is entered through an opening.
  - When the equipment has been dropped and is damaged.

1.4.8 Maintenance and Inspection

- Do not use or store the equipment near flammable chemicals such as acetone, benzene, thinner, etc. If chemicals are spilled or evaporated, it may result in a fire or electric shock through contact with electric parts inside the equipment.
- If any flammable cleaning agent is used for the product, be sure to take care when using them.
- When the equipment is going to be cleaned, be sure to turn OFF the power of the equipment and unplug the power cord from the AC outlet. Never use thinner, acetone, benzene or any other flammable cleaning agent. Otherwise, it may result in a fire or electric shock.
- Clean the plug of the power cord periodically by unplugging it from the AC outlet and removing dust or dirt from the plug, its periphery, and AC outlet with a dry cloth. If the cord is kept plugged in for a long time in a dusty, humid or sooty place, dust around the plug will attract moisture, and this could cause insulation failure that could result in a fire.
- Be sure to turn OFF the power of the equipment while cleaning. Otherwise, a fire or electric shock may occur.

1.5 Product Usage Guide

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

1.5.1 Calibration

- To ensure optimal system performance, it is important to verify that the system is calibrated correctly.
- Check if the calibration is performed after the equipment is completed to be installed or repaired.
- Do not try to use the system if the calibration has not been performed.
- You can process calibration with the calibration data CD (provided).

- The calibration result can be different by the use environment. Therefore, if the result with the provided calibration data is not satisfied, you can create the data at the field in person by using the calibration software (**VIVIX Setup**).

1.5.2 Length Measurement

- Before taking any length measurement on an image, carry out the length calibration with a reference object and verify its results for correct measurement.

1.5.3 Left/Right Marker

- The operator is responsible for making a correct and clear mark on the left or right side of the image.
- The software includes an option to mark the image with **L** (left) or **R** (right) while acquiring the image through printing and archiving.
- Prepare an alternative way to prevent any confusion if the operator does not choose to use **L/R** marks.

1.5.4 Image Backup

- To avoid missing images which might result in a patient being exposed to additional dose of radiation, it is important to send images to PACS or backup images by using film or external storage media (CD, DVD, HDD, USB).
- If the hard disk of your workstation is about to be full, the operator should backup images to somewhere else and delete them to make storage (memory) space in the hard disk for new patients.

- The image backup should be done as a routine operation for every patient and image.

1.5.5 Use Limitations

- Vieworks software has the engineer mode operated by inputting the administrator password only.
- This mode should be operated by the person who is qualified by Vieworks.

1.5.6 Disposal

- Disposal of this product in an unlawful manner may have negative effects on human health and the environment.
- Be sure to follow the procedure which is in conformity with the laws and regulations applicable in your area.

1.5.7 Pediatric Application

- Every request should be reviewed by a pediatric radiologist prior to beginning the examination to ensure that an appropriate study is being performed.
- If the technologist notices an unusual request, he or she must contact a radiologist in charge. Examples include orders- a Full Cervical, Thoracic, and Lumbar Spine series. The pediatric radiologist should contact the ordering physician and decide which study is best for the pediatric patient.
- The technologist should use a proper technique considering the patient's size to decrease the radiation dose when he or she 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 X-ray 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 while females may not be shielded because doing so 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.

1.5.8 Before Exposure

- Be sure to check the equipment daily and confirm that it works properly.
- Sudden heating of the room in cold areas will cause condensation to form on the equipment. In this case, wait until the condensation evaporates before performing an exposure. If the equipment is used while condensation is formed in it, problems may occur in the quality of captured images.
- When an air-conditioner is used, be sure to raise/lower the temperature gradually so that difference between the temperature in the room and in the equipment does not occur, to prevent condensation.

1.5.9 During Exposure

- This equipment is not protected (sealed) against liquids such as blood and medicine in the operating room. If necessary, wrap the equipment in a disposable cover when using 오.
- Do not use the selected frequency channel (2.4 ㎓ and 5 ㎓ dual band) for other wireless devices. Mutual interference may affect the image data transmission rate.
- Do not use the detector near devices generating a strong magnetic field. Doing so may produce image noise or artifacts.

1.5.10 Operating and Storage Environment

- The equipment is mainly for use in X-ray exposure rooms and hospital wards. To use it in other places, consult Vieworks' sales representative or a distributor.
- Do not expose this equipment to high temperatures and/or high humidity. Malfunctions may occur.
- When not in use, keep the products in a safe location.
- Be sure to use and store this equipment under the conditions described below.

Classification	Temperature	Humidity (Non-condensing)	Atmosphere
Operating Environment	+10 ~ +35℃	30 ~ 85%	700 ~ 1060 hPa
Storage Environment	-15 ~ +55℃	10 ~ 90%	500 ~ 1060 hPa

- The operating environment of this equipment is complied with **EN60721-3-3 Class 3K2**.
- The storage and shipping environment of this equipment is complied with **EN60721-3-2 Class 2K2**.

1.5.11 Others

- Do not use this equipment in combination with peripherals such as defibrillators or large electric motors as these may cause power-supply noise or power supply voltage variations. Doing so may prevent normal operation of this equipment and peripherals.

2. Product

This section gives an instruction about the product components and their specifications.

Components

Detector

SCU

Battery Pack

Battery Charger

Others

2.1 Components

2.1.1 Detector

Product Name	Model / Description
VIVIX-S 1417W Detector 	• FXRD-1417WA (3.4kg) • FXRD-1417WB (3.3kg)

• A deco sheet attached on the detector can be different depending on each client company.

2.1.2 SCU (System Control Unit)

Component	Model / Description
SCU Basic 	• FXRS-03A (2.8kg)
	• AC Power Cable (2m) • 110V (1EA) / 220V (1EA)
SCU mini 	• FXRS-04A (1.2kg)
	• DC Power Supply (24V)
	• AC Power Cable (2m) • 110V (1EA) / 220V (1EA)

• You can choose either SCU Basic or SCU mini depending on the purpose of use.

2.1.3 Battery & Charger

Component		Model / Description
Battery		• FXRB-01A (0.22kg, 3EA)
Battery Charger		• FXRC-01A (1.2kg)
		• FXRC-03A (0.5kg)
		• DC Power Supply (24V)
		• AC Power Cable (2m) • 110V (1EA) / 220V (1EA)

2.1.4 Accessories

Component	Image	Description
Resource		• Calibration data ▫ Pre-offset / Post-offset ▫ Gain / Defect map
		• Software (Viewer or SDK) • Manual
Cables		• Tether interface cable (7m)
		• Ether Con cable (7m, Option)
		• Generator interface cable (15m)
		• UTP LAN cable (15m, Direct) ▫ CAT5E or CAT6
Velcro tape **(25mm x 50mm / 6ea)**		• Attached to the corners of bucky and the friction surface of a detector.
Velcro Tape **(25mm x 100mm / 6ea)**		

- The use of accessories and cables other than those approved and sold by Vieworks Co., Ltd. may result in increased release of electromagnetic waves or decreased stability 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**.
- Consult your sales distributor or manufacturer if you have any concerns.

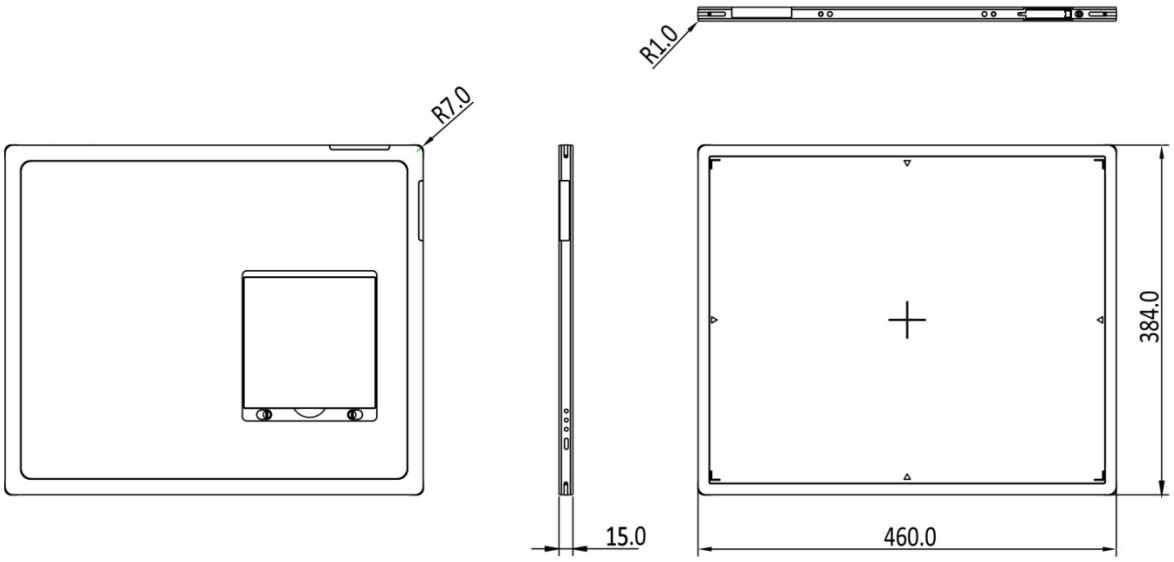
2.2 VIVIX-S 1417W Detector

VIVIX-S 1417W is designed to acquire digital images by collecting x-ray signals and sereval conversion processes. You can use the acquired image (14" x 17" film size) diversely depending on the purpose of use.

2.2.1 Specifications

Item	Specifications
Model	• FXRD-1417WA (CsI) • FXRD-1417WB (Gadox)
Image Sensor	• TFT: a-Si (Amorphous Silicon) • Panel Size: 368㎜ x 442㎜ • Fill Factor : 75%
X-ray Scintillator Type	• FXRD-1417WA : Csl: TI (Thallium doped Caesuim Iodide) • FXRD-1417WB : Gd_2O_2S:Tb (Gadolinium oxysulfide)
Pixel Pitch	• 0.14㎜ (140㎛)
Field of View	• 14" x 17"
Active Area (H x V)	• 358.4㎜ × 430.08㎜
Active Array	• 2560 x 3072 pixels
Effective Area	• FXRD-1417WA: 356.72㎜ x 428.4㎜ • FXRD-1417WB: 358.4㎜ x 430.08㎜
Effective Array	• FXRD-1417WA : 2548 x 3060 • FXRD-1417WB : 2560 x 3072
Grayscale	• 14bit
Spatial Resolution	• Min. 3.5 lp/㎜
Image Acquisition Time (Wired)	• 2 sec.
Image Acquisition Time (Wireless)	• Preview Acquisition Time: 2 sec. • High Resolution Acqusition Time: 4.5 sec. (including preview time)
Recommended Cycle Time	• 15 sec.
X-ray Synchronization Control	• AED (Auto Exposure Detection) • DR Trigger (External line trigger)
Rated Power Supply (DC +24 V, Max. 0.5 A)	• DC +24 V, Max. 0.5 A • Wired: Powered by SCU with tether interface connection. • Wireless: Powered by a battery pack (4,000 ㎃h)
Power Consumption	• Max. 12 W
Dimensions (H × W × D)	• 384㎜ × 460㎜ × 15㎜
Weight (including a battery pack)	• FXRD-1417WA : 3.4 kg • FXRD-1417WB : 3.3 kg
Image Transfer	• Wired: Gigabit Ethernet (1000BASE-T) via Power over Ethernet • Wireless: IEEE802.11a/b/g/n
Data Transmission Rate (Wired)	• Max. 1Gbps
Data Transmission Rate (Wireless)	• 802.11b: Max. 11Mbps • 802.11a/g: Max. 54Mbps • 802.11n: Max. 300Mbps (MIMO 2X2)

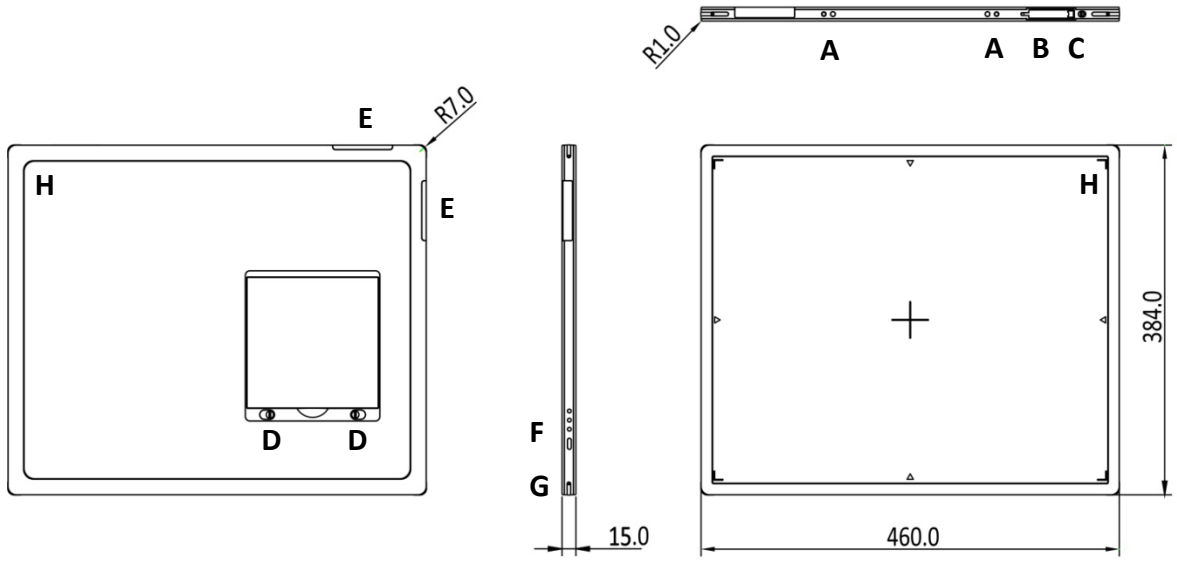
2.2.2 Drawing Sheet



Item	Specifications
Dimensions (H × W × D)	384.0㎜ × 460.0㎜ × 15.2㎜
Curvature of Edges	R7.0

- Under the **ISO 4090** regulation, the allowed tolerance of a thickness of detector is from **-2㎜ ~ +1㎜**.
- Image starting point (0.0) of this detector is located nearby the tether interface connector (B). You can change the displayed direction of an image from **VIVIX Setup** program, but it does not mean that the starting point and direction of the original image are changed. Refer to **VIVIX Setup Operation Manual** for the detailed information.

2.2.3 Functions



	Name	Description
A	**Grooves**	Used for installing a handle or grid holders.
B	**Tether interface connector**	Used for tighten the tether interface cable. Used for wired connection between the detector and SCU.
C	**Tether interface holder**	Fix/release holder of the tether interface cable.
D	**Battery lock lever**	Lock/unlock lever of the equipped battery pack.
E	**Antenna for wireless LAN**	Antennas for wireless communication (2EA)
F	**Status indicator**	Detector status indicator • **DATA LED** (Blue): Indicates communication and transmission • **ACTIVE LED** (Orange): Indicates ready to work • **POWER LED** (Green): Indicates power On/Off status
G	**Power button**	Detector power button
H	**Image starting point**	Location of imaging starting point (0,0)

2.2.4 Wireless Communication

Item	Specifications
Wireless standard	IEEE802.11a/b/g/n
Frequency range	2.412 ~ 2.472㎓ (13 Channels) 5.18 ~ 5.24㎓ (4 Channels) 5.745 ~ 5.805㎓ (4 Channels)
Data transmission rate	802.11b: Max. 11Mbps 802.11a/g: Max. 54Mbps 802.11n: Max. 300Mbps (MIMO 2X2)

Modulation	OFDM : BPSK, QPSK, 16-QAM, 64-QAM DSSS : CCK, DBPSK, DQPSK
Transmission power	Max. 17dBm
Security	WPA-PSK, WPA2-PSK
Antenna	Two Dual Band Antennas (Detector: internal, SCU: external)

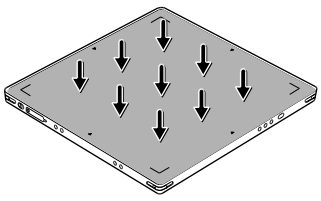
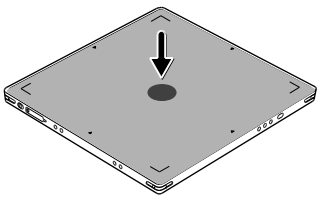
- The specifications of detector and SCU are same, except the location of antenna.

2.2.5 Use Environment

Item	Operation	Storage & Transportation
Temperature	+10 ~ +35℃	-15 ~ +55℃
Humidity	30 ~ 85% (Non-condensing)	10 ~ 90% (Non-condensing)
Atmospheric pressure	700 ~ 1060 hPa	500 ~ 1060 hPa
Shock	1.6G	20G
Vibration	0.7G	0.7G

- The use environment of detector and SCU is same.

Load Limit of Detector

Uniform load	Local load
Over the whole surface	Center diameter 40㎜
Max. 150kg	Max. 100kg
	

- Do not let the paitent or object heavier than load limit be on the detector. Then, detector can be damaged.
- Do not let the patient lie or get on the detector. Internal devices such as a sensor can be seriously damaged even if his/her weight is within the load limit.

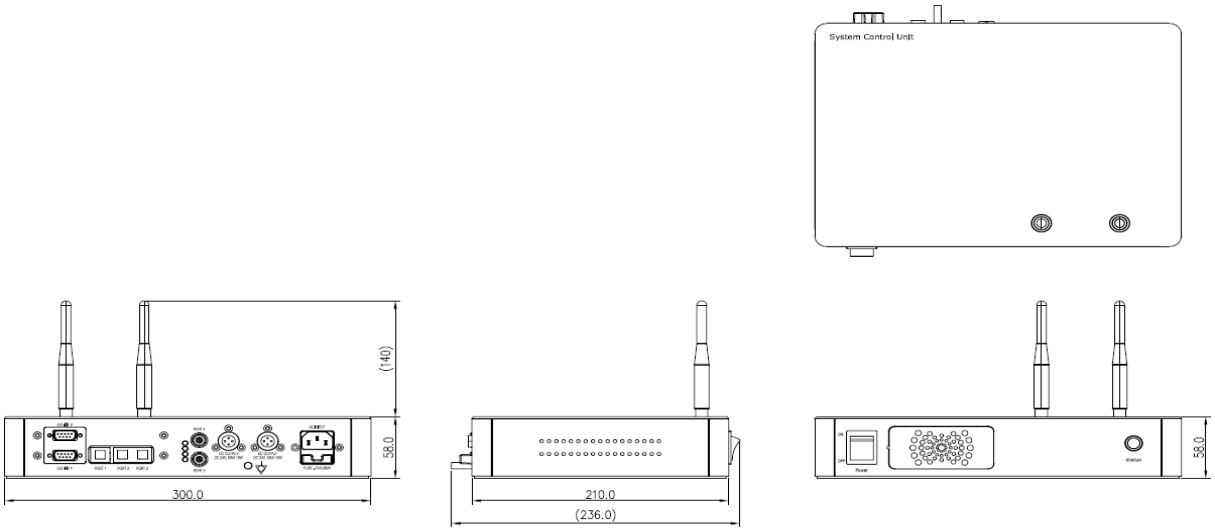
2.3 SCU Basic (FXRS-03A)

SCU Basic synchronizes the image and X-ray signal as locating among the detector, workstation and the X-ray generator. You can use the SCU Basic directly when the power supplies to SCU Basic after connecting it under the **VIVIX-S 1417W** system environment.

2.3.1 Specifications

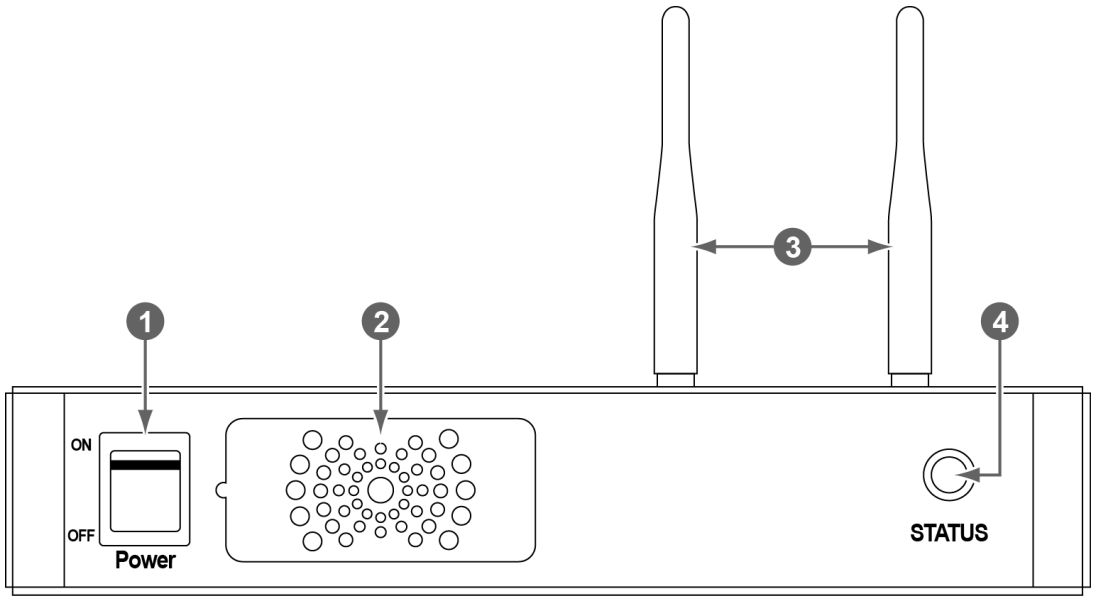
Item	Specifications
Model	• FXRS-03A
Power supply	• Input: AC100 to 240V, 50/60Hz, Max. 2.0-0.8A • Output: DC +24V 3.25A, 78W
Cable connection port	• Gigabit Ethernet port (3EA) • PoE (Power over Ethernet) Port (2EA)
Wireless communication	• IEEE 802.11n (2.4 ㎓ / 5 ㎓)
Dimension (H × W × D)	• 236.0㎜ × 300.0㎜ × 58.0㎜
Antenna	• 140㎜ (2EA, Dual band)
Weight	• 2.8 kg

2.3.2 Drawing Sheet



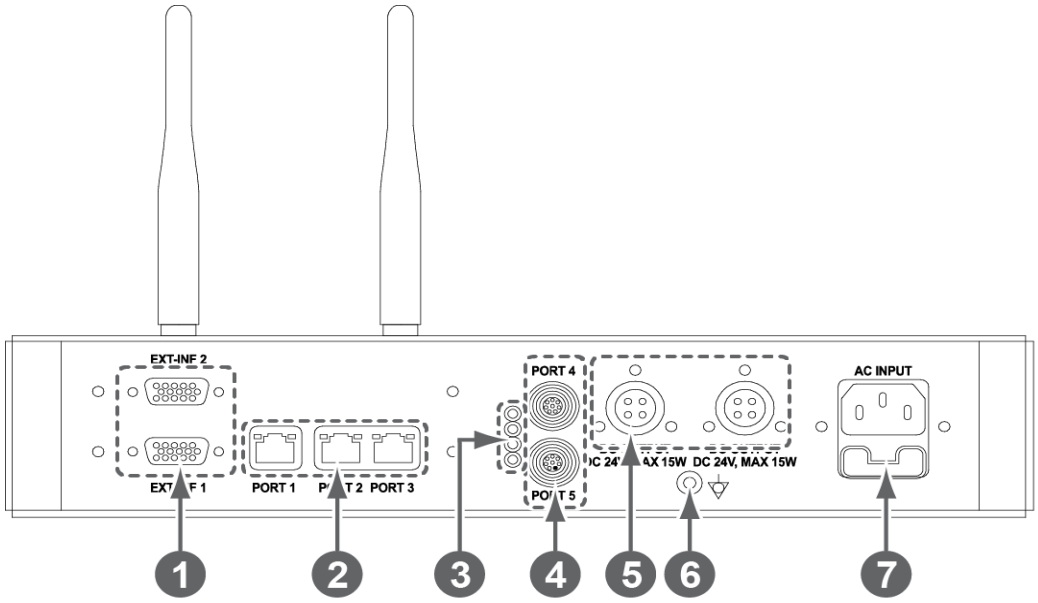
2.3.3 Functions

Front Side



No.	Name	Description
1	**Power switch**	Turns on/off the power of SCU Basic. (Including green LED lamp)
2	**Fan**	Expels the air inside of SCU Basic.
3	**Antenna**	Assists communications between the detector and SCU Basic.
4	**Status LED**	Indicates the operation and connection status of SCU Basic. • Blinking green: Booting • Green: Completed to boot up • Blue: The software is connected and ready to communicate.

Rear Side



No.	Name	Description
1	**EXT_INF1** **EXT_INF2**	X-ray generator interface connector (D-SUB 15 pins x 2 EA, Female) • **EXT_INF1** : 1 ~ 15 • **EXT_INF2** : 16 ~ 30
2	**LAN port** **(Port 1, 2, 3)**	Gigabit Ethernet port (1000BASE-T) • **Port 1**: Communicates between workstation and SCU Basic. • **Port 2, 3**: Communicates between **FXRD-1717S** detector and SCU Basic when configuring multiple detectors.
3	**PoE status lamp**	Indicates the status of PoE port (Port 4, Port 5) • Green: 1 Gbps • Orange: 100 Mbps
4	**PoE port** **(Port 4, 5)**	PoE (Power over Ethernet) port (1000BASE-T) • Communicates between the detector and SCU Basic. • Supplies power to the detector.
5	**Detector power supply port**	Max. DC +24V/15W (2 ports) • For **FXRD-1717S** detector only.
6	**P.E**	Equipotential ground
7	**AC input port**	T2AL250V fuse (2 EA) • 100 ~ 240V • 50/60Hz • Supplies power to SCU Basic.

• The P.E (Potential Equalization) port of SCU is used to maintain potential equalization between SCU and another grounded system. Use the conductor that can be detached without the use of a tool.

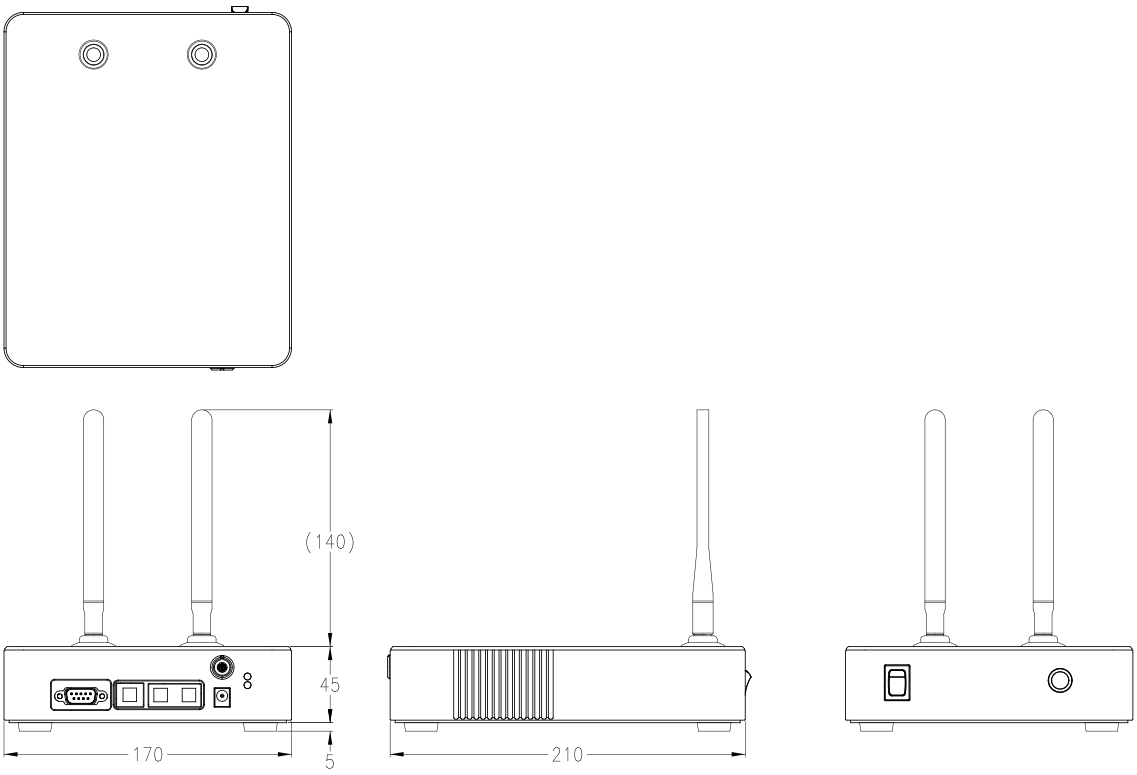
2.4 SCU mini (FXRS-04A)

SCU mini synchronizes the image and X-ray signal as locating among the detector, workstation and the X-ray generator. You can use the SCU mini directly when the power supplies to SCU mini after connecting it under the **VIVIX-S 1417W** system environment.

2.4.1 Specifications

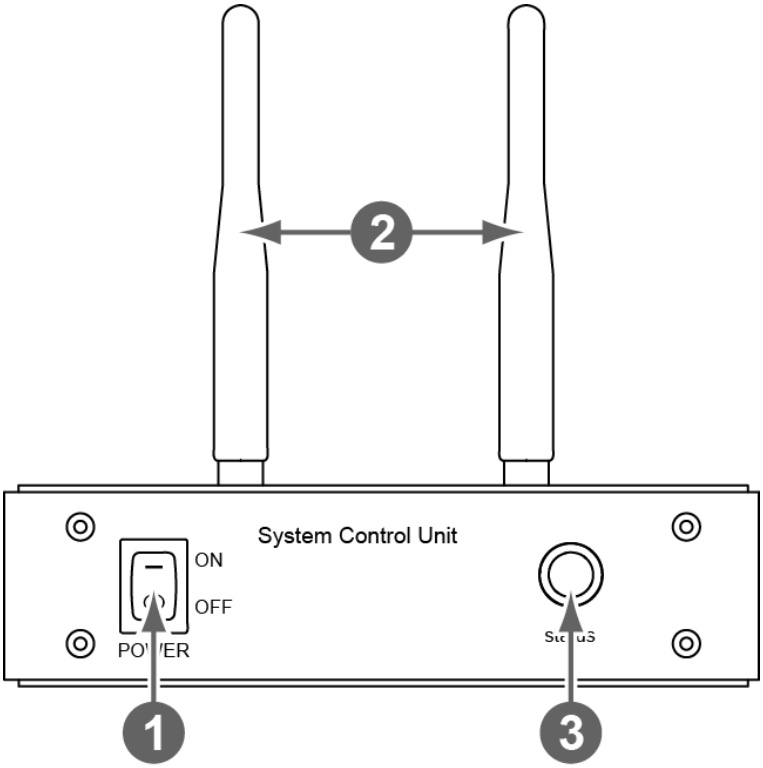
Item	Specifications
Model	• FXRS-04A
Power supply	• Input: DC +24V 2A Max
Cable connection port	• Gigabit Ethernet port (3EA) • PoE (Power over Ethernet) Port (1EA)
Wireless communication	• IEEE 802.11n (2.4 ㎓ / 5 ㎓)
Dimension (H × W × D)	• 210.0㎜ × 170.0㎜ × 45.0㎜
Antenna	• 140㎜ (2EA, Dual band)
Weight	• 1.2kg

2.4.2 Drawing Sheet



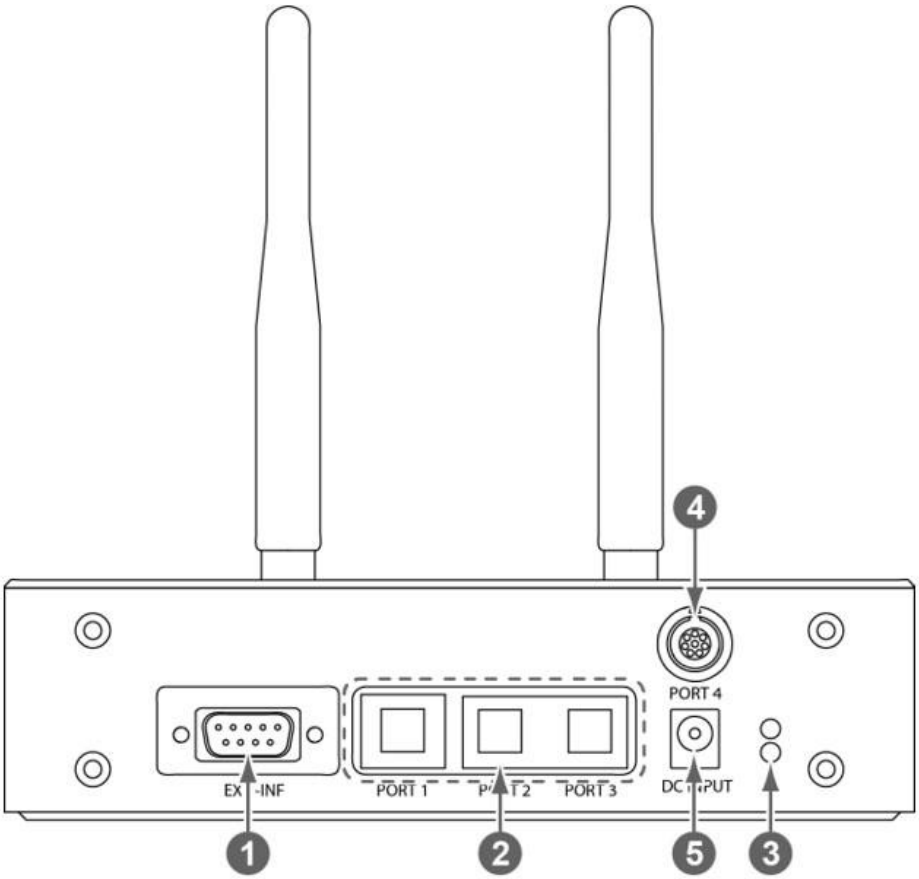
2.4.3 Functions

Front Side



No.	Name	Description
1	**Power switch**	Turns on/off the power of SCU mini.
2	**Antenna**	Assists communications between the detector and SCU mini.
3	**Status LED**	Indicates status of SCU mini operation and connection. • Blinking green: Booting • Green: Completed to boot up • Blue: The detector is connected and ready to communicate.

Rear Side



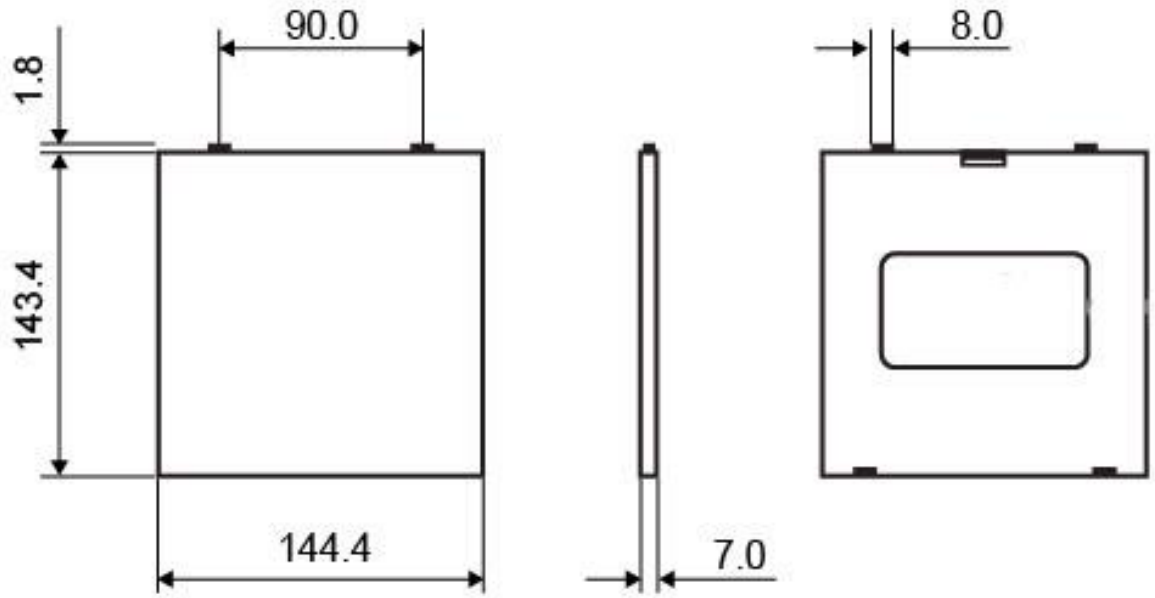
No.	Name	Description
1	**EXT_INF**	X-ray generator interface connector (D-SUB 15pin, Female)
2	**LAN port (Port 1, 2, 3)**	Gigabit Ethernet port (1000BASE-T) • **Port 1**: Communication between the workstation and SCU mini. • **Port 2, 3**: Communication between **FXRD-1717S** detector and SCU mini when configuring multiple detectors.
3	**PoE status lamp**	Indicats the status of **PoE** port. • Green: 1 Gbps • Orange: 100 Mbps
4	**PoE port**	**PoE** (Power over Ethernet) port (1000BASE-T) • Communication between the detector and SCU mini. • Supplies power to the detector.
5	**DC power input port**	DC +24V • Supplies power to SCU mini.

2.5 Battery Pack

2.5.1 Specifications

Item	Specifications
Model	• FXRB-01A
Type	• Lithium Polymer
Rated Power Supply	• Output: DC +7.4V
Capacity	• 4000㎃h
Number of cell	• 2S1P (2 Series 1 Parallel)
Life	• Approx. 500 times (Fully charged/Discharged completely, 1cycle)
Dimension (H × W × D)	• 143.4 ㎜ × 144.4 ㎜ × 7.0 ㎜
Weight	• 220g

2.5.2 Drawing Sheet

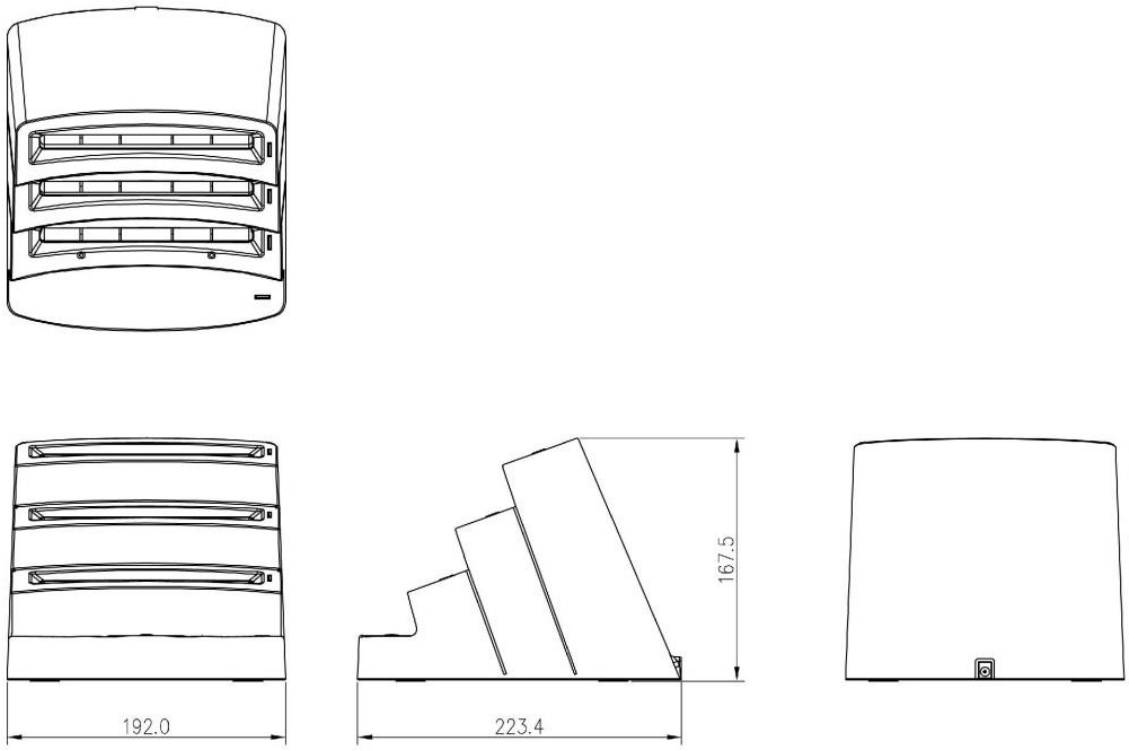


2.6 Battery Charger (FXRC-01A)

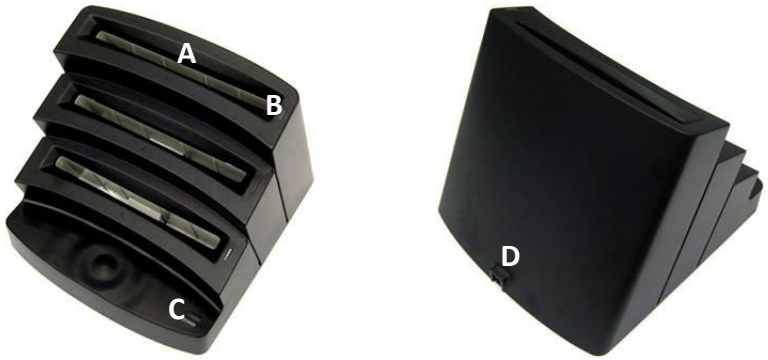
2.6.1 Specifications

Item	Specifications
Model	• FXRC-01A
Simultaneous Charging	• 3 battery packs
Charging time	• 2 hours
Rated power supply	• DC +24V, 2.7A Max.
Dimension (H × W × D)	• 167.5 ㎜ × 192.0 ㎜ × 223.4 ㎜
Weight	• 1.2 kg

2.6.2 Drawing Sheet



2.6.3 Functions



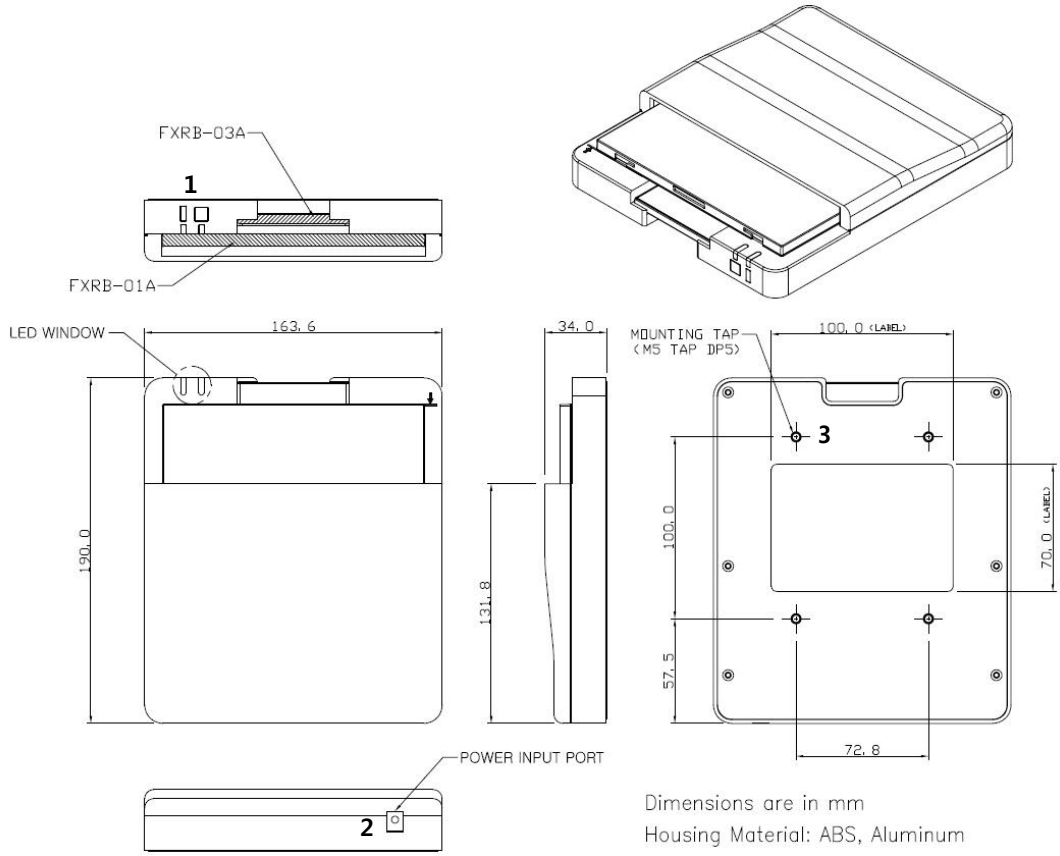
	Name	Description
A	**Battery insertion**	• Insertion part for battery charging.
B	**Charging status LED**	• Indicates charging status of a battery pack. ▫ Orange: Charging ▫ Green: Fully charged
C	**Power LED**	• Indicates the power status On / Off
D	**Power input port**	• Supplies electric power by connecting a power adapter to the battery charger.

2.7 Battery Charger (FXRC-03A)

2.7.1 Specifications

Item	Specifications
Model	FXRC-03A
Simultaneous Charging	2 battery packs (FXRB-01A (1ea) / FXRB-03A (1ea))
Charging time	FXRB-01A: 3 hours FXRB-03A: 2 1/2 hours
Rated power supply	DC +24V, 2A Max.
Dimension (H × W × D)	163.6 ㎜ × 190 ㎜ × 34.0 ㎜
Weight	0.5 kg

2.7.2 Drawing Sheet



No.	Name	Description
1	**LED Window**	Indicates the location and status of a battery pack being charged. □ : FXRB-03A □ : FXRB-01A
2	**Power input port**	Supplies electric power by connecting a power adapter to the charger.
3	**Mounting hall**	Screw holes for fixing the charger to the external device. (M5 x 8)

2.8 Others

2.8.1 X-ray Generator (Recommended Exposure Condition)

Item	Recommended condition
X-ray energy range	40kVp ~ 150kVp
Reliability (Lifetime Dose)	74Gy or higher (35 uGy x 365days x 24hrs x 60min. x 60sec. / 15sec.)

2.8.2 Recommended Specifications of Workstation (PC)

Item	Recommended specification
Operating System	VIVIX Setup • Microsoft Windows 7 (32bit / 64bit) • Microsoft Windows 7 64bit SP1 (Professional Edition or higher) • Microsoft Windows Vista Service pack 1 or higher (32bit / 64bit) • Microsoft Windows 8 (32bit / 64bit) / 8.1 64bit SP1 (Professional Edition or higher • Microsoft Windows 8.2 (32bit / 64bit)
CPU	Intel Core i5 2600 or higher (or compatible CPU)
Memory	4GB or higher
Hard Disk	1TB or higher
LAN Card (only for detector communication)	• Gigabit (for detector only) • Intel® PRO 1000 Series (Gigabit LAN Card for network interface) • Min.requiremetns ▫ Speed: 1Gbps or more ▫ Jumbo Frames: 9K • Receive Descriptors: 2K (1024 or higher)
Monitor	1024 x 768 or more
CD-ROM	CD or DVD R/W

2.8.3 Recommended Specifications of Grid

Item	Recommended specification
SID	• 100cm / 130cm / 150cm / 180cm
Size	• 451mm x 365mm x 1.5mm
Ratio	• 8.1 / 10:1 / 12:1
Frequency	• 215 line/inch
INTER SPACER	• AL

• Check the recommended specifications by Vieworks first before buying the generator, workstation and grid.

3. System Configuration

This section gives information about the various connection / configuration ways among the detector, SCU, workstaton and X-ray generator. You can figure out the most suitable way of system configuration through this instruction.

Detector Connection Methods

Diagram

System Configuration

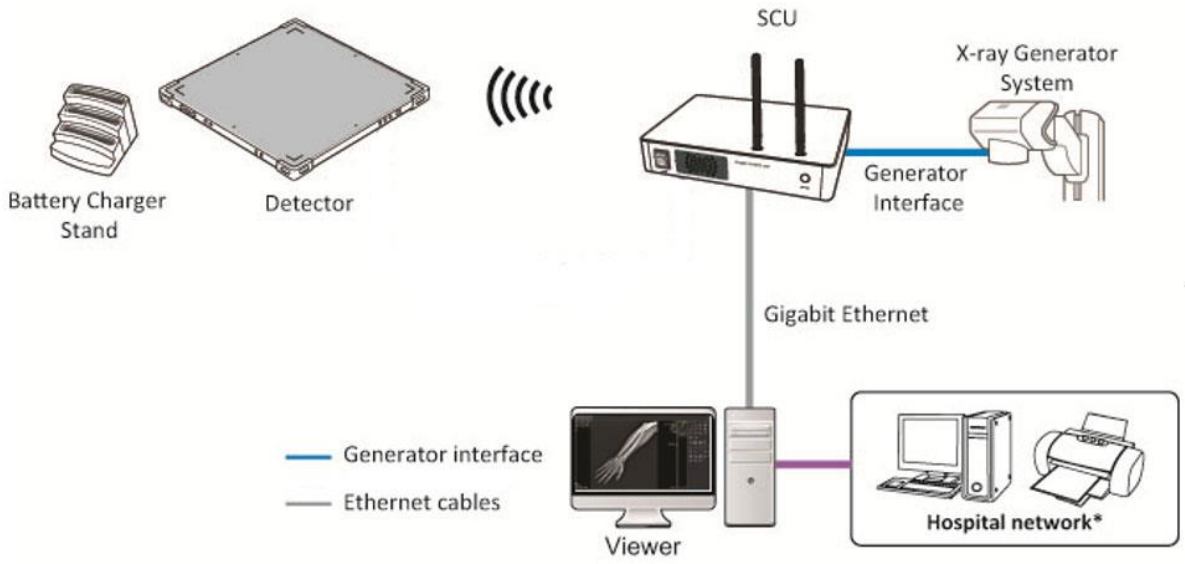
Generator Interface

Configuring DR Trigger Interface

3.1 Detector Connection Methods

You can organize wired or wireless connection between the **VIVIX-S 1417W** detector and SCU. You can also choose other connection ways suitable for the use environment in case of need.

3.1.1 Wireless Connection



- The images and data are transmitted between the **VIVIX-S 1417W** detector and SCU by wireless connection.
  - A battry pack should be installed in the detector to use it under the wireless configuration.

	• We recommend you to use the wireless connection method for the following cases.
	  ▫ When using the unfixed detector.
	  ▫ When the wired communication is in trouble by the interruption of cables.
	• The wireless connection is more freely to operate than the wired connection.
	• Use the wireless connection with a laptop computer to enhance mobility.

	• Be sure to operate the wireless commnunication between the detector and SCU within a maximum of **8m**. • Use of multiple WLAN devices within the same frequency band may interfere with each wireless communication and cause a decline in transmission speed. • Do not cover or block the wireless module of the detector. Also, do not put any shielding materials between the detector and SCU. Otherwise, the transmission speed or operable distance may be reduced.

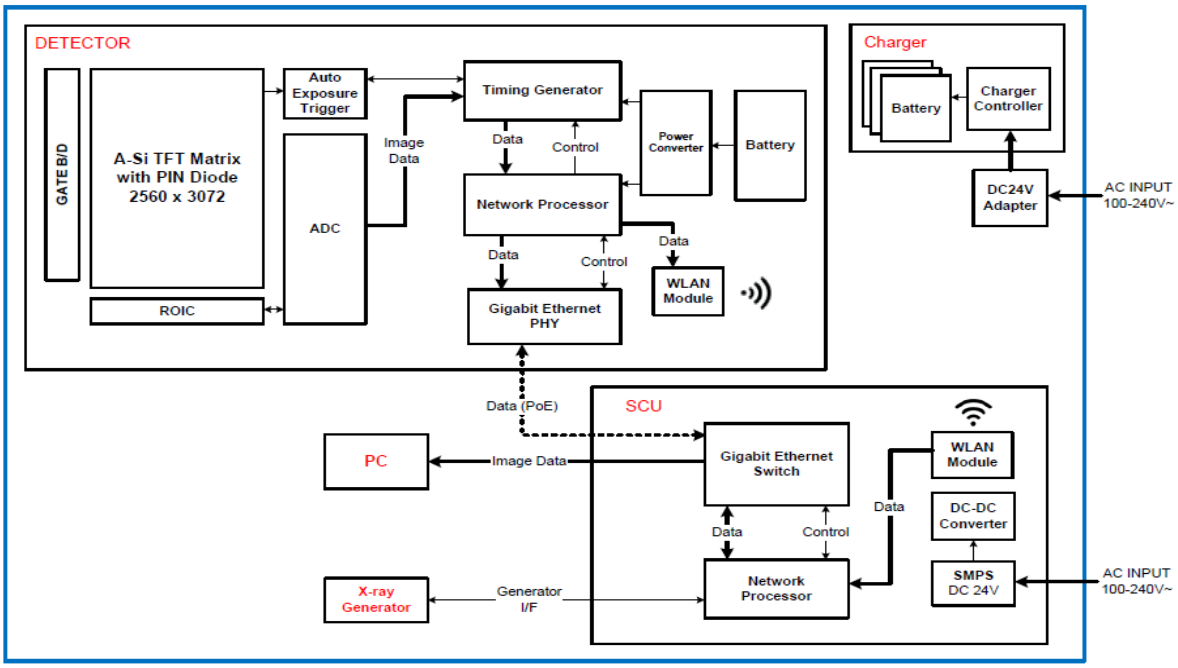
3.1.2 Wired Connection

- Connect **VIVIX-S 1417W** detector and SCU with a tether interface cable to make a wired configuration.
  - As the tether interface cable supplies power to the detector, a battery pack is not needed to be installed in the detector.

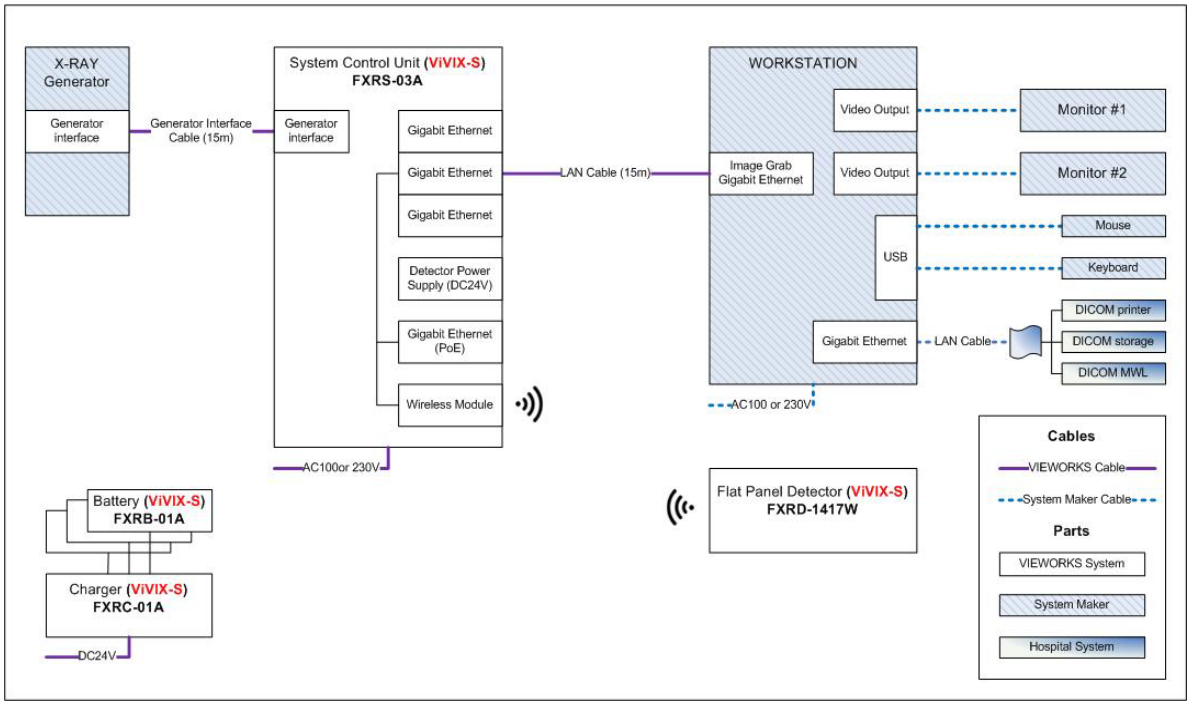
- We recommend you the wired connection method for the following cases.
  - When continuous power supply to the detector is needed.
  - When the detector is fixed in a bucky stand or on a table.
  - When you upgrade the detector firmware or change the inner configural information.
  - When you need the data communication to be faster than the wireless connection.
- A battery pack in the detector keeps charging under the wired connection.
- The wireless communication module of the detector maintains inactivation status.

3.2 Diagram

3.2.1 Block Diagram



3.2.2 Wiring Diagram

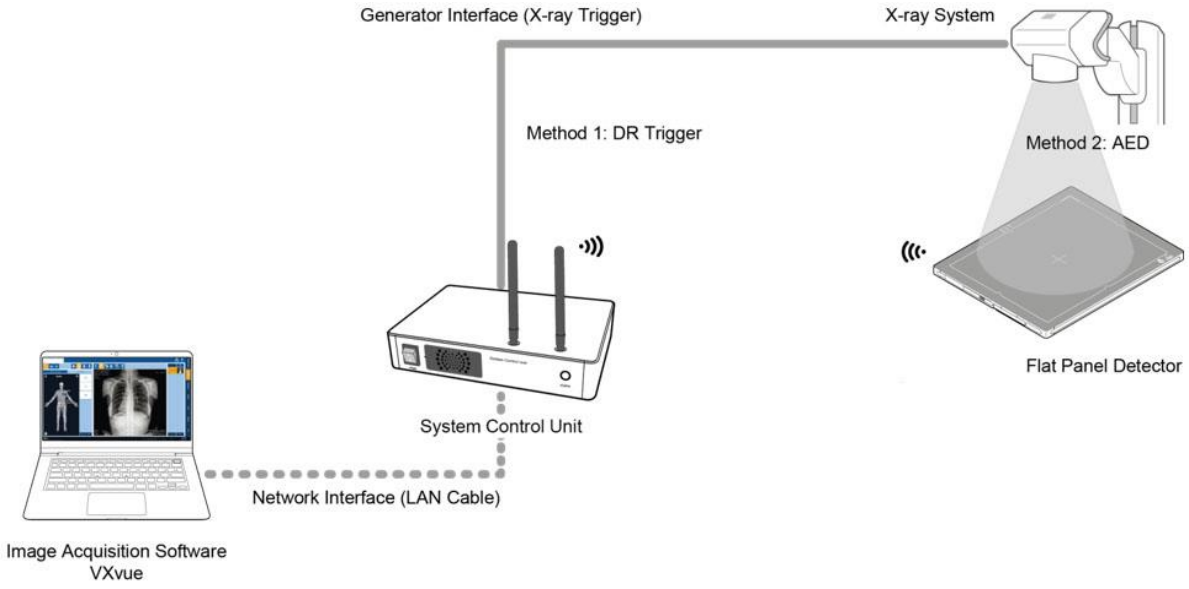


3.3 System Configuration

This section gives information about the configuration method of **VIVIX-S 1417W** detector, SCU, workstation and the generator.

3.3.1 AP Mode (SCU AP Mode)

SCU AP mode is the wireless connection method that connecting the detector with SCU as the center wirelessly.



SCU & Detector

- The **VIVIX-S 1417W** detector and SCU are connected wirelessly. In this case, SCU and the detector operate as **AP** (Access Point) and **STATION** respectively.

SCU & PC (Workstation)

- SCU and PC (Workstation) are connected with the LAN cable.

- It is available to connect SCU and PC wirelessly. In this case, SCU and the detector operate as **AP** (Access Point) and **STATION** respectively.

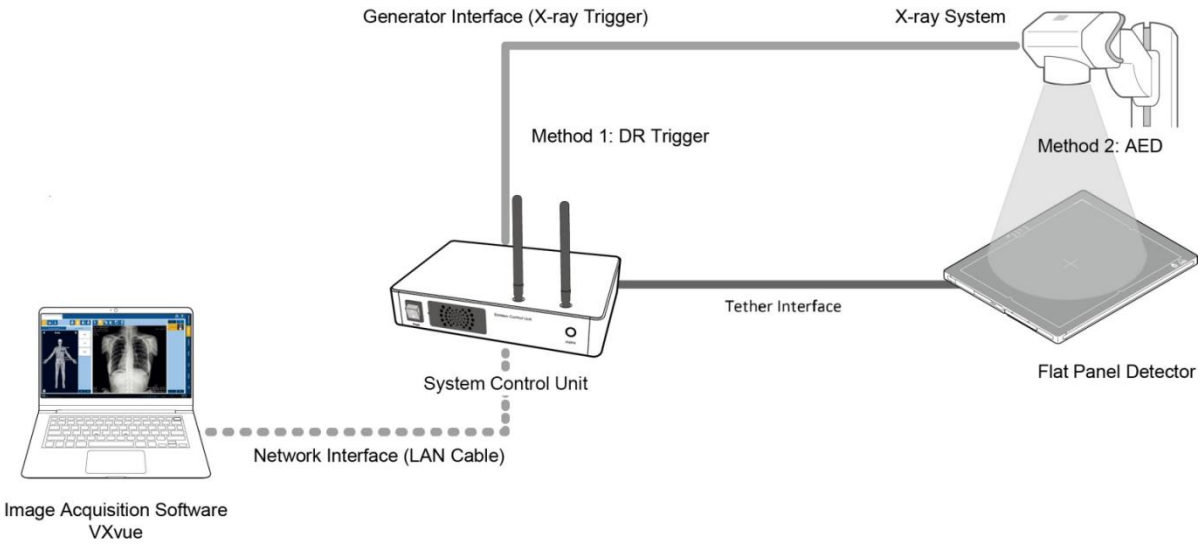
SCU & Generator

- SCU and the generator can be connected with the generator interface cable.

- It is unnecessary to connect SCU and the generator with a generator interface cable if you use AED mode of the detector.

3.3.2 Tether Interface Mode

Tether interface mode is the wired connection method that connecting the detector with SCU as the center.



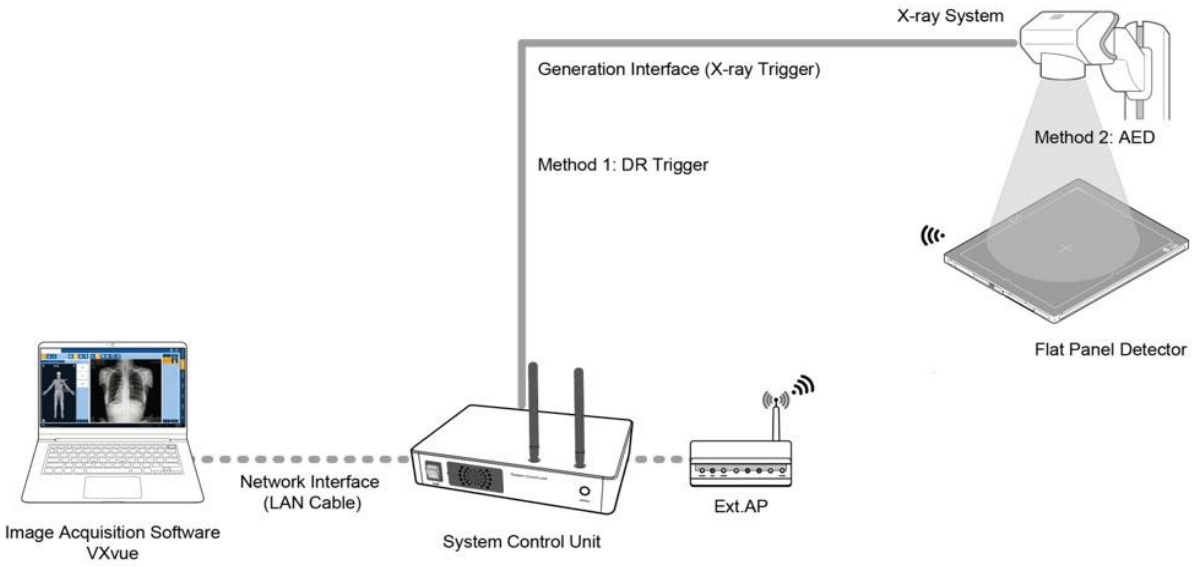
SCU & Detector

- SCU and the **VIVIX-S 1417W** detector are connected with the tether interface cable.

	• Other connection ways of the tether interface mode are the same as the AP mode.

3.3.3 External AP Mode

External AP mode is the wireless connection method that adding the external AP device instead of SCU.



External AP & SCU

- The external AP and SCU are connected with a LAN cable.

External AP & Detector

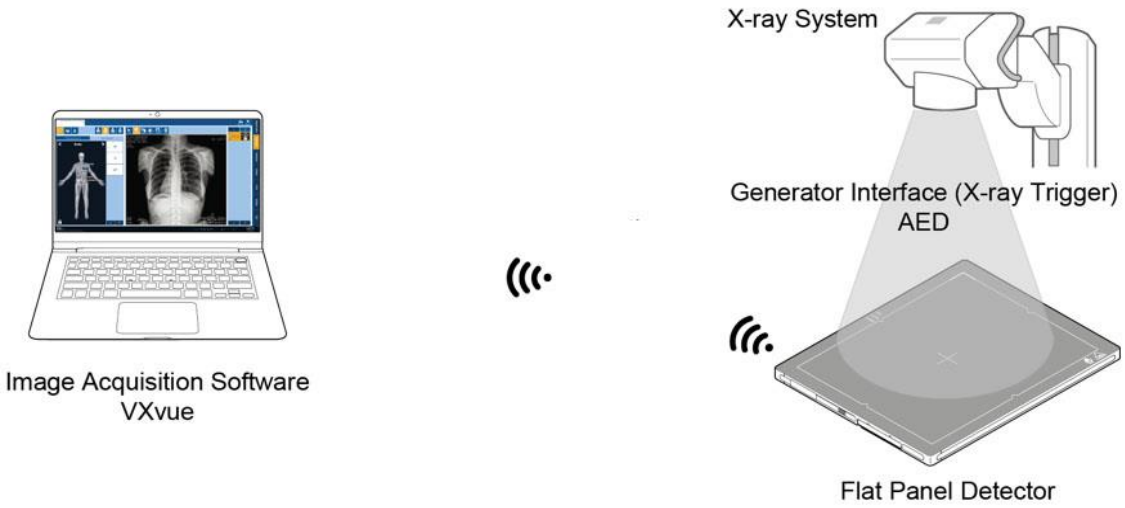
- The external AP and **VIVIX-S 1417W** detector are connected wirelessly. In this case, the external AP and the detector operate as **AP** (Access Point) and **STATION** respectively.

	• Other connection ways of the tether interface mode are the same as the AP mode.

	• Be sure to check the specifications of external AP device when configuring the external AP mode, since the wireless communication performance can be different by the specifications.

3.3.4 Detector AP Mode

Detector AP mode is the wireless connection method that connecting the PC (Workstation) with the detector as the center wirelessly.



Detector & PC (Workstation)

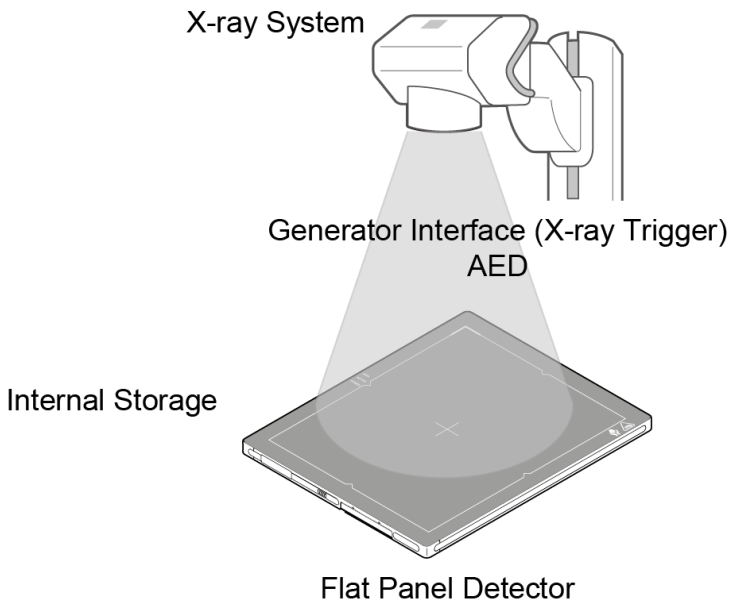
- The **VIVIX-S 1417W** detector and PC are connected wirelessly. In this case, the detector and the PC operate as **AP** (Access Point) and **STATION** respectively.

	• Since SCU is not used for configuring the detector AP mode, you can only use the **AED** mode without a wired connection. (Cannot use the **DR Trigger** mode.) • This mode can be used when mobility and portability are needed.

	• When configuring the detector AP mode, be sure to check the specifications of wireless module installed in the PC. The wireless communication performance can be different depending on the specifications of the wireless module. • If the wireless connection cannot be made normally because of unexpected problems, SCU can be needed to check the detector condition.

3.3.5 Detector Stand-Alone Mode

You can use the **Stand-Alone** mode without making a wired or wireless connection.



- You should take images with the **AED** mode only when using the **Stand-Alone** mode. (Cannot use the **DR Trigger** mode.)
- The acquired images are stored in the internal storage of the detector in order and the images can be transmitted to the PC after connecting the detector to the PC.
- The transmitted images are removed automatically from the detector.

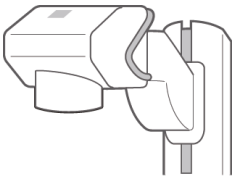
3.4 Generator Interface

VIVIX-S 1417W detector provides **AED** and **DR Trigger** interface as a generator interface way to acquire images by detecting X-ray.

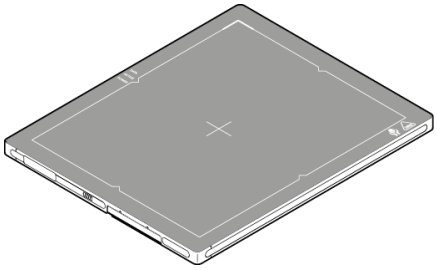
Interface	Description
AED	The detector detects X-ray exposure from the generator automatically and then performs image acquisition without any cable connection.
DR Trigger	The detector and generator receive and send their signal to each other for image acquisition. SCU and X-ray generator should be connected with the generator interface cable.

3.4.1 AED (Auto Exposure Detection) Interface

If the **VIVIX-S 1417W** detector is used as the **AED** interface, you can acquire images without connecting the generator to the detector with a generator interface cable.



X-ray Generator System

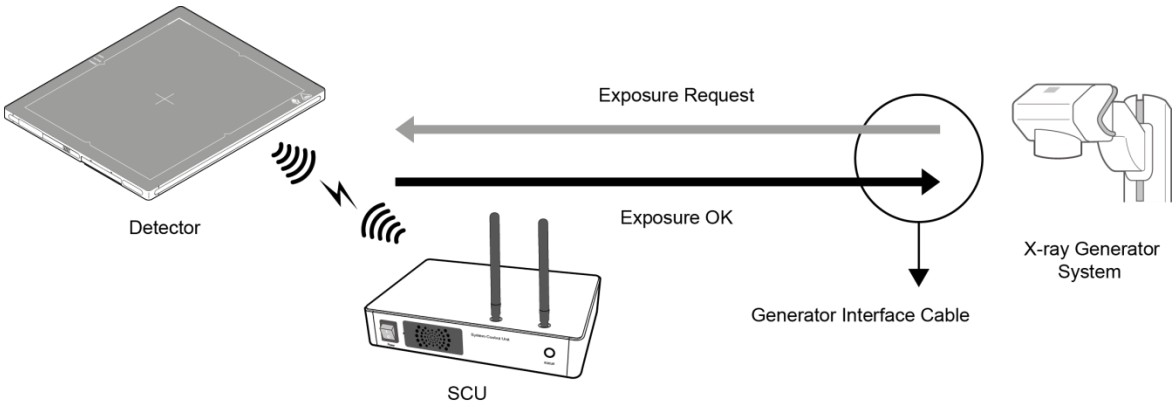


Cautions when using AED interface

- Make sure to follow the operating environmental condition (Temp: +10℃ ~ +35℃).
- Do not give impact to the product. If it receives strong jolt, unwanted images may be acquired without the X-ray exposure because of the malfunction of the **AED** sensor.
- You may not acquire images or horizontal artifacts may occur depending on the external environment such as exposure condition, thickness of object or the use of grid.
- When you set X-ray exposure area to the direction of the detector, the center of the detector should be involved in the X-ray exposure area. Otherwise, you may not acquire an image.

3.4.2 DR Trigger Interface

Connect the detector and X-ray generator with a generator interface cable, and then acquire images by sending and receiving their signal.



Signal Processing Steps

1 The detector receives **EXP_REQ** signal from the X-ray generator.
2 After the detector completes to prepare image acquisition, it sends the **EXP_OK** signal to the X-ray generator.
3 The X-ray generator confirms **EXP_OK** signal and generates X-rays.
4 The detector acquires images and then transmits the image data.

- **EXP_REQ** is a signal sent from X-ray generator to the detector for requesting exposure.
- **EXP_OK** is an exposure ready signal from the detector to X-ray generator.

3.5 Configuring DR Trigger Interface

To configure the **DR Trigger** interface, SCU and the generator should be connected with a generator interface cable. Connect the one end of generator interface cable to **EXT_INF** port of SCU, and then connect the other end to the generator.

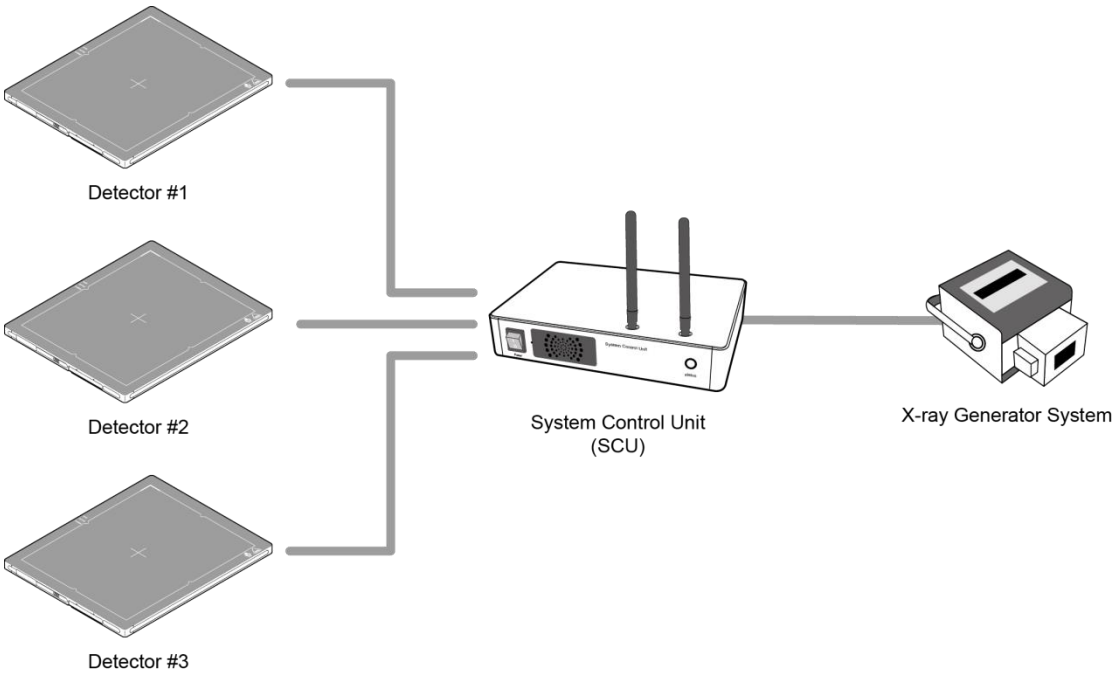
- Up to three generators can be connected with SCU Basic.
- Up to two generators can be connected with SCU mini.

3.5.1 Trigger Interface Way

The generator interface cable is connected differently depending on the Trigger interface ways.

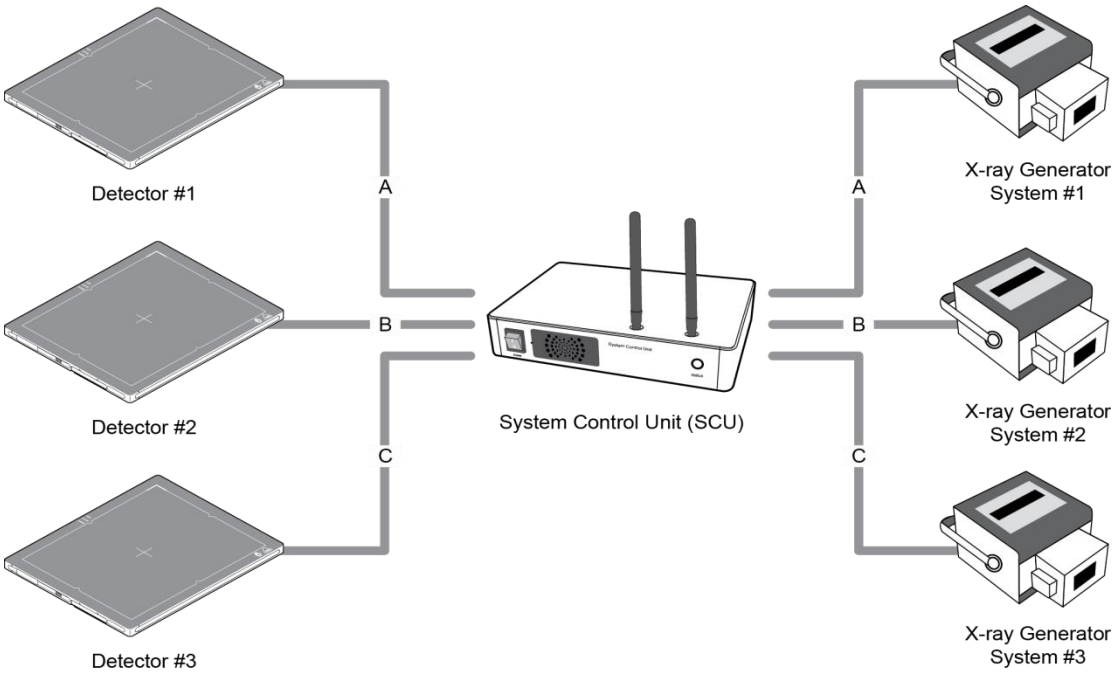
Trigger Interface	Description
Packet Trigger	Handles exposure signal by exchanging packet.
Line Trigger	Handles exposure signal by exchanging electrical signal.

3.5.2 Packet Trigger



- Multiple detectors share one generator signal together.
- Connect a generator interface cable to one of the pin groups.
- The generator tramsmits and receives signal with the one selected detector for taking images.

3.5.3 Line Trigger

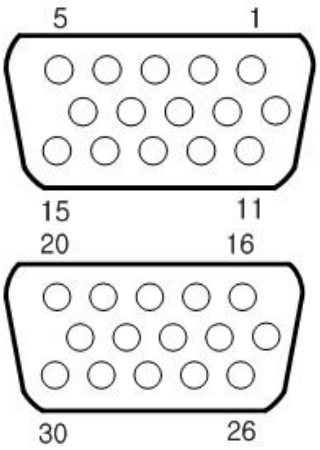
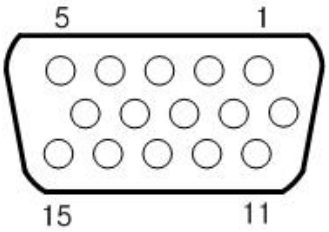


- Each detector shares a signal signal by being connected with generators separately.
- Up to three X-ray generators can be connected to SCU.
- The connection of each detector and generator can be configured from **VIVIX Setup**.

- You should comprehend about a detector and X-ray generator to make correct exposure. Otherwise, X-ray can be exposed to the detector in different location.
- The engineer who understand the generator device and interface technology should be in charge of interface work between SCU and the generator.

3.5.4 EXT_INF Port Pin Map

EXT_INF port is D-SUB 15 pin female connectors of SCU, and used for the generator interface.

Product	EXT_INF port
SCU Basic (FXRS-03A)	
SCU mini (FXRS-04A)	

EXT_INF1 port pin map definition (1 ~ 15)

No.	Signal name	I/O	Type	Color	Ch.	Description
1	**EXP_REQ+_A**	Input	Contact	Red	A	Receives EXP_REQ
2	**EXP_REQ-_A**	Input	Contact	Black	A	Returns signal from EXP_REQ+_A
3	**EXP_REQ_TTL_A**	Input	TTL	Orange	A	Receives EXP_REQ
4	**EXP_REQ_GND_A**	Input	TTL	Gray	A	Returns signal from EXP_REQ_TTL_A
5	**EXP_OK_POWER_A/B**	Input	-	Yellow	A/B	Power of TTL signal
6	**EXP_OK+_A**	Output	-	Green	A	Sends EXP_OK
7	**EXP_OK-_A**	Output	-	Brown	A	Returns signal from EXP_OK+_A
8	**EXP_OK+_B**	Output	-	Blue	B	Sends EXP_OK
9	**EXP_OK-_B**	Output	-	Pink	B	Returns signal from EXP_OK+_B
10	**Reserved**	-	-	-	-	Reserved for test only.
11	**EXP_REQ+_B**	Input	Contact	White	B	Receives EXP_REQ
12	**EXP_REQ-_B**	Input	Contact	Purple	B	Returns signal from EXP_REQ+_B
13	**EXP_REQ_TTL_B**	Input	TTL	White/Red	B	Receives EXP_REQ
14	**EXP_REQ_GND_B**	Input	TTL	White/Black	B	Returns signal from EXP_REQ_TTL_B
15	**Reserved**	-	-	-	-	Reserved for test only.

EXT_INF2 port pin map definition (16 ~ 30)

No.	Signal name	I/O	Type	Color	Ch.	Description
16	**EXP_REQ+_C**	Input	Contact	Red	C	Receives EXP_REQ
17	**EXP_REQ-_C**	Input	Contact	Black	C	Returns signal from EXP_REQ+_C
18	**EXP_REQ_TTL_C**	Input	TTL	Orange	C	Receives EXP_REQ
19	**EXP_REQ_GND_C**	Input	TTL	Gray	C	Returns signal from EXP_REQ_TTL_C
20	**EXP_OK_POWER_C**	Input	-	Yellow	C	Power of TTL signal
21	**EXP_OK+_C**	Output	-	Green	C	Sends EXP_OK signal
22	**EXP_OK-_C**	Output	-	Brown	C	Returns signal from EXP_OK+_C
23	**EXT_W+**	Input	Contact	-	-	User-defined Pin 1
24	**EXT_W-**	Input	Contact	-	-	Returns signal from EXT_W+
25	**EXT_X+**	Input	Contact	-	-	User-defined Pin 2
26	**EXT_X-**	Input	Contact	-	-	Returns signal from EXT_X+
27	**EXT_Y+**	Input	Contact	-	-	User-defined Pin 3
28	**EXT_Y-**	Input	Contact	-	-	Returns signal from EXT_Y
29	**EXT_Z+**	Input	Contact	-	-	User-defined Pin 4
30	**EXT_Z-**	Input	Contact	-	-	Returns signal from EXT_Z+

- Since **SCU mini** has the **EXT_INF 1** port only, two generators can be connected with it.

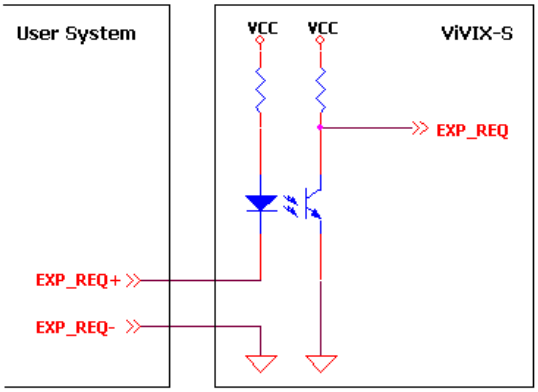
- Up to three X-ray generators can be connected to **EXT_INF1** and **EXT_INF2** ports, and each generator should be connected with a same channel.

- There are **Contact** type (OPEN/ CLOSE) and **TTL** type (ON/ OFF) on the signal in/output pin.
- TTL type information
  - ON : VCC
  - OFF : GND
  - Current: 5 mA ~ 10 mA
  - Voltage: 12 V ~ 24 V

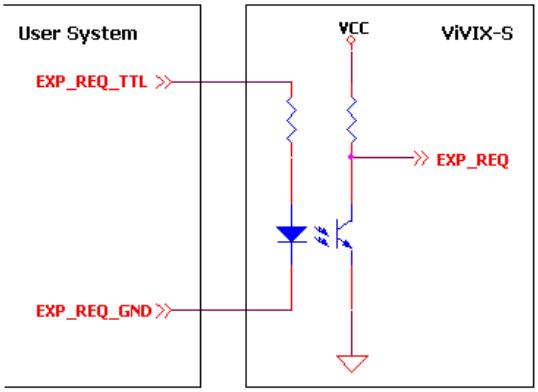
- When you plan to add interface using a user-defined pin, contact to the person in charge of Vieworks.

3.5.5 Input / Output Circuit

Exposure Request Input Circuit (EXP_REQ)

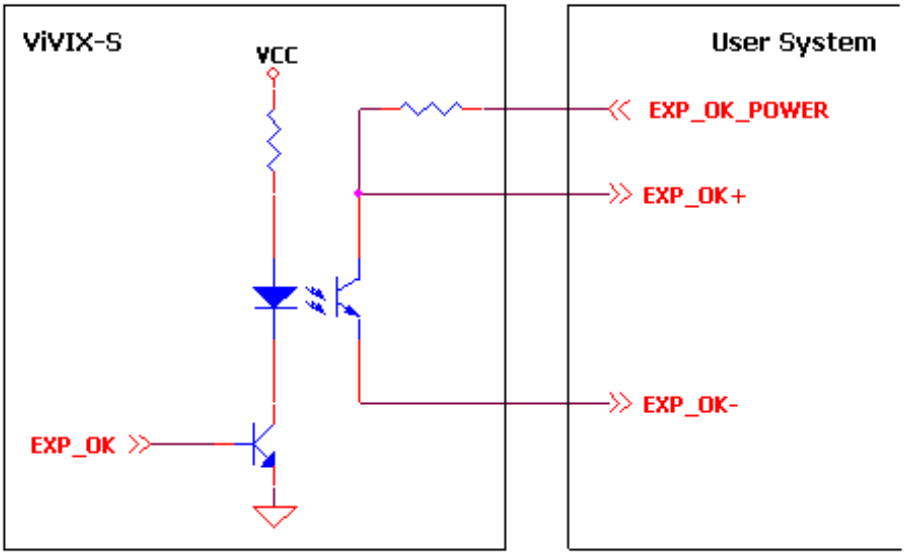


<Contact Type>



<TTL Type>

Exposure Respond Output Circuit (EXP_OK)



4. Settings

This section gives information about the process and method of installation to use a detector.

Battery Pack

Product Installation

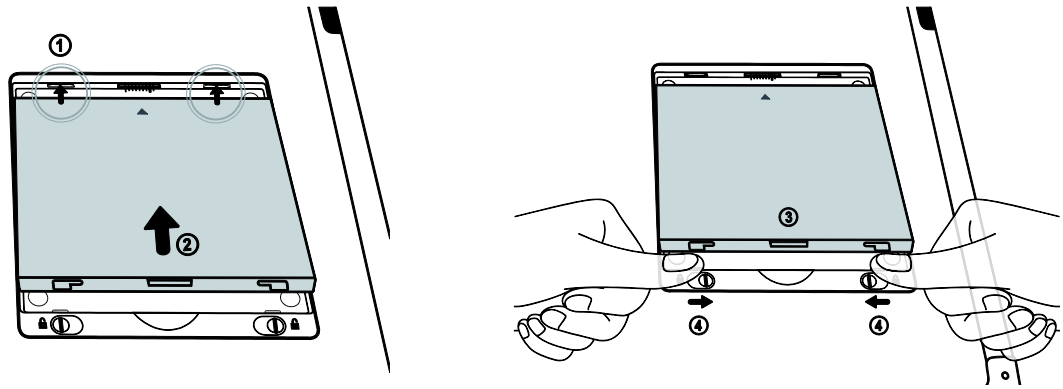
Device Setting

Diagnosis of Divices

4.1 Battery Pack

- Detector and its attached devices should be installed by an authorized service engineer.
- If you encounter any problems, consult the sales representative in Vieworks or a relevant engineer.

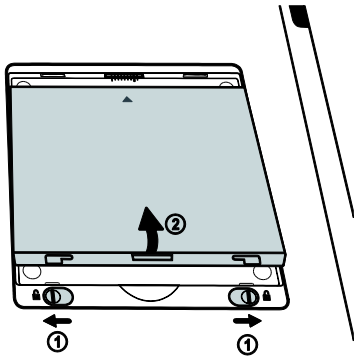
4.1.1 How to Attach a Battery Pack



1 Align the claw on the charged battery pack and the groove on the battery bay.
2 Slide the battery pack into the battery compartment of the detector.
3 Push down the battery pack from top to bottom.
4 Slide the battery lock lever until it clicks into place.

- Check if the battery is fully charged before using.
- Make sure that the battery pack is securely attached.
- The remaining battery can be checked from the **VIVIX Setup** program.

4.1.2 How to Detach a Battery Pack



1 Slide the lock levers as shown below.
2 Put your finger on the groove at the center of a battery pack and life it up to remove the battery pack.

- Make sure to turn off the detector before detaching a battery pack. Press and hold the **power** button for about 3 seconds. All status LED lamps are off and then the detector is turned off.

4.1.3 How to Charge Battery Packs (FXRC-01A)

The detector is battery-operated when it is connected wirelessly. Charge the battery pack fully and attach it to the detectors.

1 Supply power to the charger. When the power LED is turned to green, it means that the power is permitted.
2 The battery is charged automatically when it is inserted to the charger. The status LED is turned to orange while the battery is charged, and the LED is turned to green when the battery is fully charged.
3 Detach the battery pack from the charger when it is charged fully.
4 While charging a battery pack, it is available to use the detector by connecting it with a tether interface cable.

	Stimultaneous charging	Charging time
Battery charger	3 battery packs	2 hrs
Tether interface cable	1 battery pack	5 hrs

- The charging time can be different depending on temperature and the charging status of a battery.

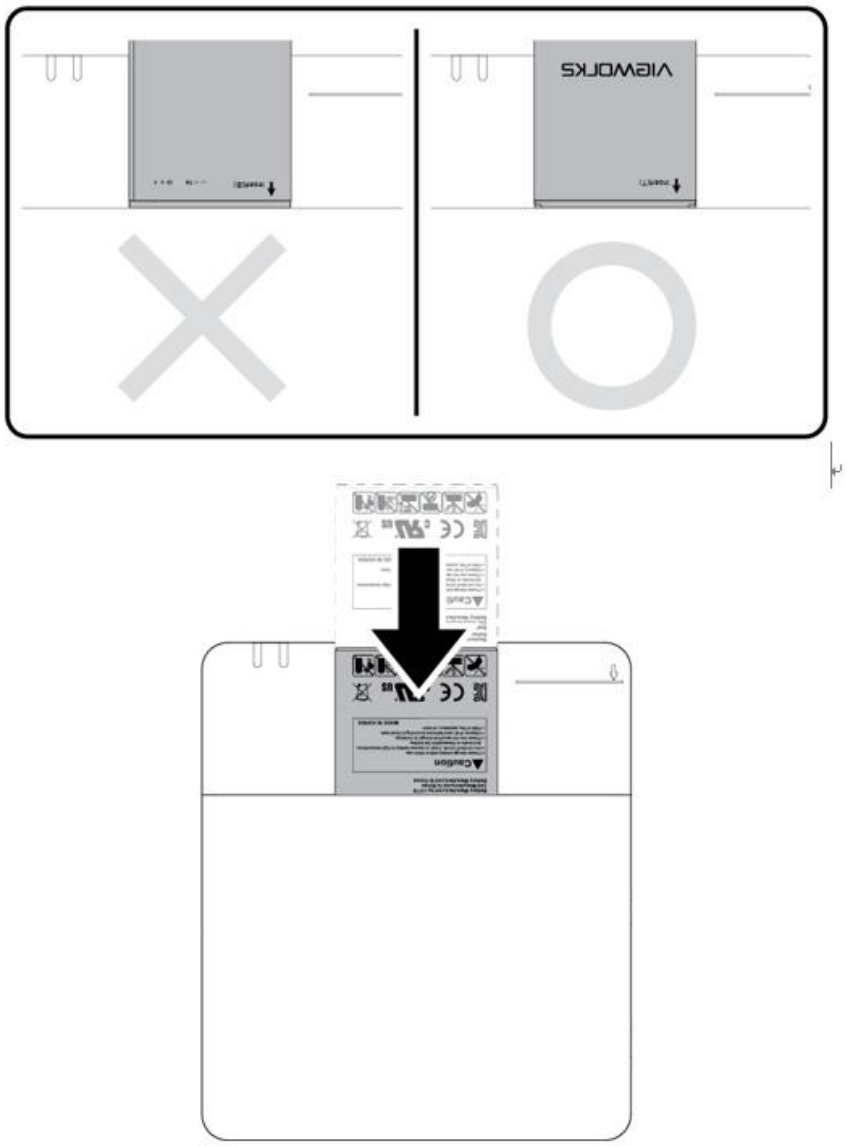
- This detector is designed to make a battery being discharged little by little during the detector is powered off. Therefore, remove the battery pack when the detector is not to be used for some time. Otherwise, over discharge may occur resulting in the shortened battery life.

- Do not use the charger around the paitent.
- Charge the battery with the charger provided from Vieworks.
- Securely plug the power cord of the charger into the AC outlet. If contact failure occurs, or if dust/metal objects come into contact with the exposed metal prongs of the plug, fire or electric shock may result.
- Use only a power adapter complying with **IEC 60601-1** or **IEC 60950-1**.

4.1.4 How to Charge Battery Packs (FXRC-03A)

Charging type 1

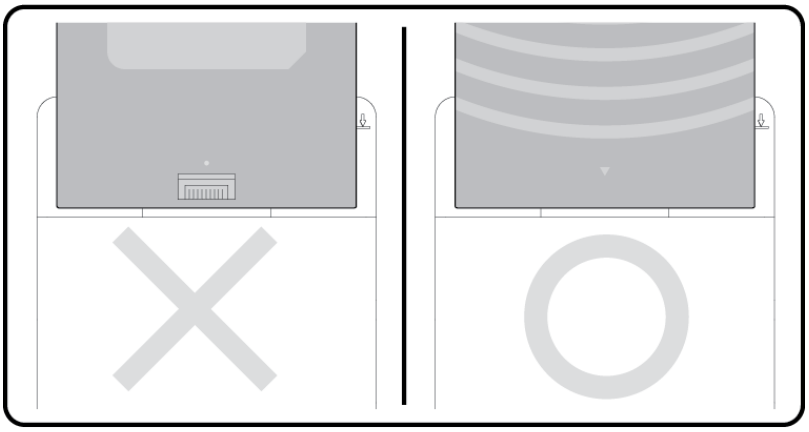
Before charging a battery pack, supply power to the charger with a power adapter.

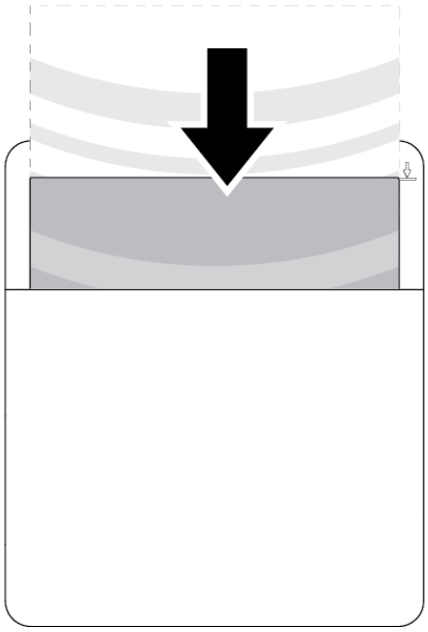


1 Put the **FXRB-03A** battery pack to the bottom of a charger until it clicks.
2 The battery is started charging automatically. The charger light turns orange / green color when the battery is being charged / fully charged.
3 Disconnect the battery pack from the charger when the charging is completed.

Charging type 2

Before charging a battery pack, supply power to the charger with a power adapter.





1 Put the **FXRB-01A** battery pack into the slot.
2 The battery is started charging automatically. The charger light turns orange / green color when the battery is being charged / fully charged.
3 Disconnect the battery pack from the charger when the charging is completed.

- The charging time can be different depending on temperature and charging status of a battery.
- While charging a battery pack, it is available to use the detector by connecting it with a tether interface cable.

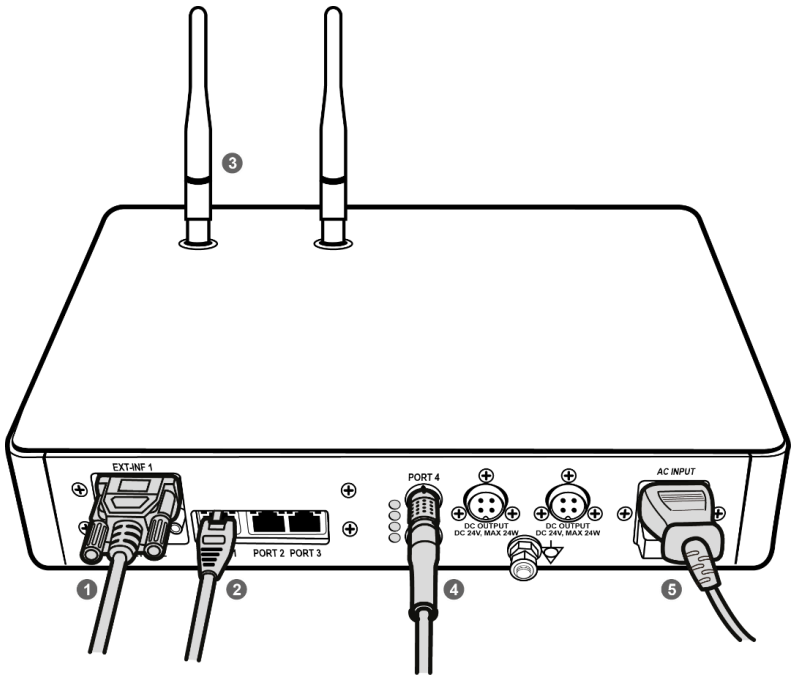
- This detector is designed to make a battery being discharged little by little during the detector is off. Therefore, remove the battery pack when the detector is not used for some time. Otherwise, over discharge may occur resulting in the shortened battery life.
- Do not use the charger around the paitent.
- Charge the battery with the charger provided by Vieworks.
- Securely plug the power cord of the charger into the AC outlet. If contact failure occurs, or if dust/metal objects come into contact with the exposed metal prongs of the plug, fire or electric shock may result.
- Use only a power adapter complying with IEC 60601-1 or IEC 60950-1.

4.2 Product Installation

4.2.1 Connecting Devices

- Installation of this equipment should be made by licensed and authorized personnel by Vieworks.
- This equipment must be connected to the power with protective earth only.

SCU Basic (FXRS-03A)



1 If you use the **DR Trigger** interface, connect the one end of generator interface cable to the **EXT_INF** port of SCU Basic, and the other to the X-ray generator.

- If you use the AED interface, a generator interface cable is not needed as the detector operates by detecting X-ray automatically.

2 Connect one end of the LAN cable to one of the LAN ports of SCU Basic, and the other to the LAN Card Connector of workstation assigned for data transfer.

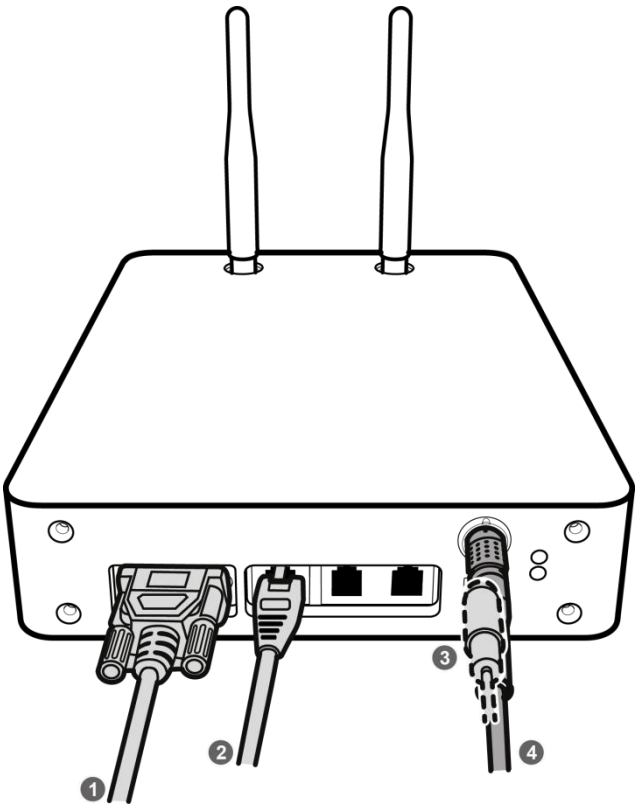
3 Stand the antenna of SCU Basic upright.

4 To transmit image data using a tether interface cable, connect the one end of the tether interface cable to the **port 4** or **port 5** of SCU Basic and the other to the detector.

- If you use the wireless communication method, a tether interface cable is not needed as the image is transmitted wirelessly.

5 To supply power, connect the AC power cable to the AC power input port of SCU Basic.

SCU mini (FXRS-04A)



1 If you use the **DR Trigger** mode, connect the one end of generator interface cable to the **EXT_INF** port of SCU mini, and the other to the X-ray generator.

- If you use the AED mode, a generator interface cable is not needed as the detector operates by detecting X-ray automatically.

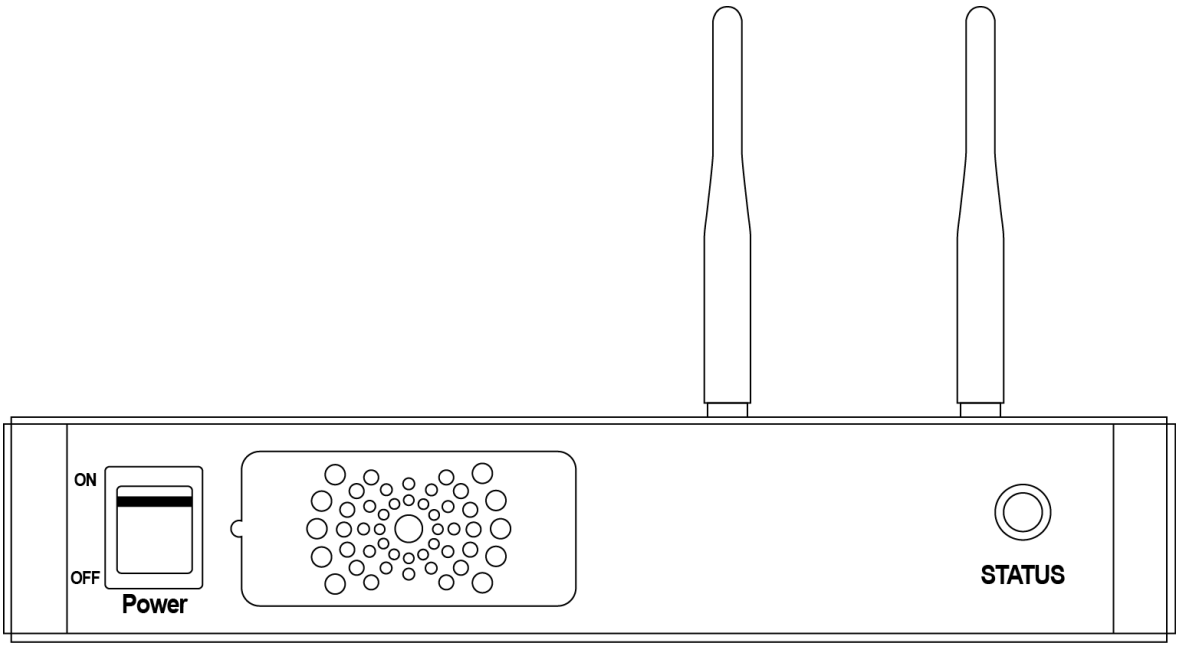
2 Connect one end of the LAN cable to one of the LAN ports of SCU mini, and the other to the LAN Card Connector of workstation assigned for data transfer. Stand the antenna of SCU mini upright.

3 To transmit image data using a Tether Interface, connect the one end of the tether interface cable to the port of SCU mini and the other to the detector.

- If you use the wireless communication method, a tether interface cable is not needed as the image is transmitted wirelessly.

4 To supply power, connect the DC power cable to the DC power input port of SCU mini.

4.2.2 Booting Up SCU



1 Turn on the power switch at the front side of SCU.
2 Check if the power switch of SCU lights up green.
3 Check if the status indicator is blinking in green after the power switch of SCU is permitted.
4 Check if the status indicator of SCU is blinking in green and turns to light up in the same color.

- When the power switch lights up green, it means that the power is applied normally.
- When the status indicator is blinking in green, it means that the booting of SCU is in progress.
- If the status indicator lights up green, it indicates that the SCU is being operated normally after booting up.

4.2.3 Booting Up the Detector

- The procedures in this chapter are explained according to the default setting status of a detector (factory reset) and the use of wireless connection.
- Refer to <5.3 Product Initialization> for the detailed information about the default setting status of a detector.

1 Attach a charged battery pack to the detector.
2 Press the power button of the detector for 1 second until the power LED is turned on.
3 When the power LED is on, check if it is lit green.
4 Check if the active LED is lit orange on the detector.

- If the power LED lights up green, the DC power is permitted normally.
- If the active LED lights up orange, the detector is compeleted to boot up normally.

4.2.4 Checking Status LED of Detector

Power LED

- The power LED indicates the power status information which is permitted to the detector in green.
- The power LED lights up when the power is permitted normally.
- If the detector is connected with a tether interface cable, the power LED lights up when power is permitted to SCU because the detector is supplied power from SCU.
- The power LED is blinking when the detector is in the **sleep** mode.

Active LED

- The active LED indicates status information about the possibility that the detector can be used normally or not in orange.
- The active LED is blinking when the detector is completed to boot up normally.
- If the detector AP is on, the active LED blinks for 5 times right after the booting.

Data LED

- The data LED indicates status information about the data processing in blue.
- The data LED lights up when the detector is available to make data communication.
- If the detector is in the **sleep** mode, the data LED lights up.
- The data LED is blinking while the detector transmits or saves data.
- If the detector **AP** is **on**, the LED blinks for 5 times right after the booting.

Summary List of Detector Status LED

Information	Power lamp	Active lamp	Data lamp
Color	Green	Orange	Blue
When power is permitted	ON	OFF	OFF
Boot-up completed (AP ON)	ON	Blinking 5 times	Blinking 5 times
Boot-up completed (AP OFF)	ON	ON	OFF
Ready for communication	ON	ON	ON
Sleep mode	Blinking	ON	ON
Data communication (Send or Store)	ON	ON	Blinking
In process of wireless initialization	ON	Blinking	OFF
Power Off	OFF	OFF	OFF

- If the LED blinks abnormally, refer to <6.1Troubleshooting> to check if communication or system error is occurred.

4.3 Device Setting

4.3.1 Software Installation

1 After connecting all devices, prepare the following softwares to set, calibrate and operate the detector / SCU.

Software	Description
VIVIX Device Driver (VDD)	Image filter driver for acquiring images from a detector.
VIVIX Setup	A program for setting and managing the detector / SCU.

2 Install **VIVIX Device Driver** and **VIVIX Setup** in sequence.

- It is not necessary to install **VIVIX Device Driver** and **VIVIX Setup** separately in case of installing the **VXvue** program made by Vieworks.

3 Configure environment for the workstation.

4.3.2 Setting Detector and SCU

1 After executing **VIVIX Setup**, access to the detector and SCU to set each device properly.
2 Perform detector calibration to acquire images suitable for the installation environment.
3 Take radiographic images to check if the shooting is conducted normally.

- Refer to **VIVIX Setup Operation Manual** for the detailed information about the device settings.

- The device setting should be done by an engineer who understands the **VIVIX Setup**, Windows system, wired/wireless network and the related technique. If not, an error could occur while operating the detector, or the image quality could be affected.

4.4 Diagnosis of Devices

Execute the **VIVIX Setup** program to check if threre is any problem to operate the detector / SCU after installing and setting devices.

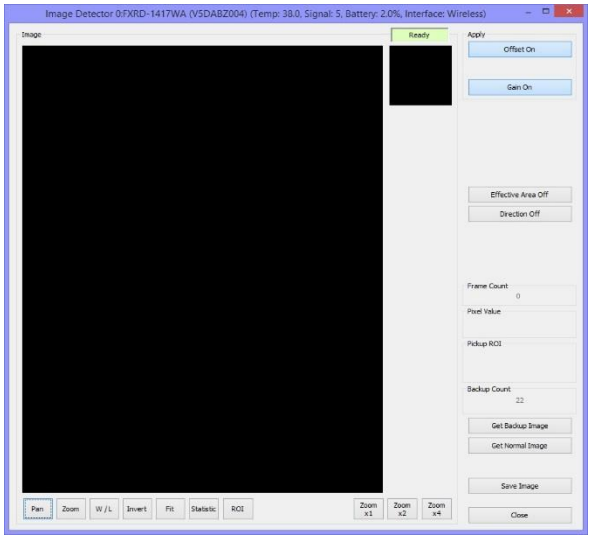
Diagnosis Items

Items	Description
Image	Diagnoses the acquired images.
Battery Pack	Diagnoses the condition of a battery pack.
Wireless Communication	Diagnoses the status of wireless communication.
Wired/Wireless Communication Speed	Diagnoses the speed of wired/wireless communication.
Self-diagnosis	Diagnoses defects of a detector by self-diagnosis.

- Set the devices and perform calibration again if any problem is found during the diagnosis. Contact the person in charge of service if the problem is not corrected.

4.4.1 Image Diagnosis

1 Execute **VIVIX Setup** and move to the **Image** dialog.
2 Take an image and check if it has any problem.
3 Take a dark image and check if it has any problem.
4 Check the effective area and whole area of the image



- Refer to **VIVIX Setup Operation Manual** for the detailed information about the image diagnosis.

- If any problem is found on the image, check if it is caused by the surrounding environment and calibrate the detector again. Contact the person in charge of Vieworks if the problem is caused by the performance of a detector.

4.4.2 Battery Pack Diagnosis

Check battery remains from the detector

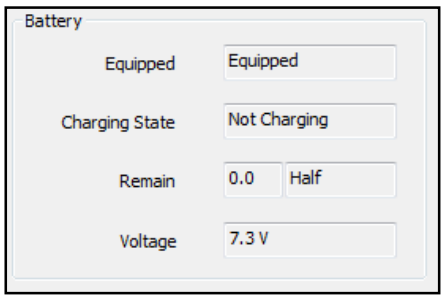
1 Check if a battery pack is attached to the detector.

2 Check remains of a battery from LED on the side of a detector.

Check battery remains from VIVIX Setup

3 **Execute VIVIX Setup** and go to the **Information** tab of the **Diagnosis** dialog.

4 **Check** remains and voltage of a battery**.**



- You can also check the battery remains from **VXvue** or **VIVIX SDK**.
- Refer to **VIVIX Setup Operation Manual** for the detailed information about the battery diagnosis.

- Since a battery pack is consumables which performance will be decreased as time passes, make sure to check its life when you use it. If a battery pack has any problems, consult the person in charge of Vieworks.

Display of Battery Remains

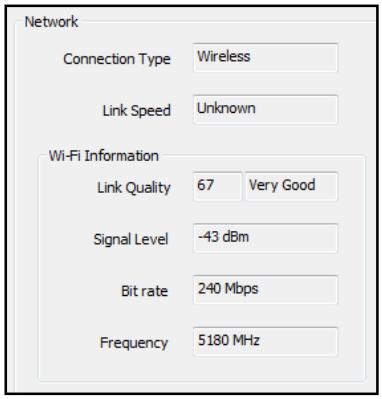
Level	Value	Battery Remains	LED Display
Full	5	81% ~ 100%	5th level
Half Quarter	4	61% ~ 80%	4thlevel
Half	3	51% ~ 60%	3rd level
Quarter	2	31% ~ 50%	2nd level
Low	1	11% ~ 30%	1st level
		1% ~ 10%	Blink
Unknown	0		Off

- If the battery remains under 30% or is at the 1st level, the system warns low battery and the detector will be turned off automatically if the battery is being consumed for a specific period of time. Therefore, it is recommended to change the battery when a warning message or indicator is displayed.

4.4.3 Wireless Communication Diagnosis

1 **Execute VIVIX Setup** and go to the **Information** tab of the **Diagnosis** dialog.

2 Check the status of wireless communication from the **Network** item.



- You can also check the communication status from **VXvue** or **VIVIX SDK**.
- Refer to **VIVIX Setup Operation Manual** for the detailed information about the wireless communication diagnosis.

Strength of Wireless Communication Signal

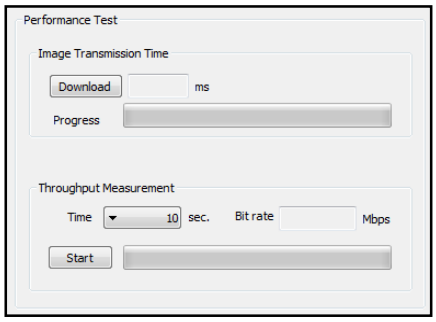
Stage	Level	Link Quality	Meaning
Very Good	5	66 ~ 70	The wireless communication is running smoothly, and it ensures the image acquisition.
Good	4	56 ~ 65	
Normal	3	41 ~ 55	The wireless communication status is normal, but it does not ensure performace of the image acquisition.
Bad	2	31 ~ 40	The wireless communication status can become unstable.
Very Bad	1	1 ~ 30	Impossible to make wireless communication normally.
Unknown	0	0	Impossible to get the wireless communication status, or the system is not connected wirelessly.

- The communication cannot run smoothly when the strength of wireless communication is under the level 2. Therefore, it is required to check the surrounding wireless communication status.

- In case of using the detector under wireless communication, be sure to check the communication status before starting to use the detector. If the status is bad, the speed of acquiring images will be very slow or you may fail to acquire images.
- Be sure to check the surrounding wireless communication to prevent communication interference. If wireless communication module in the detector has any problems, contact the service engineer in Vieworks.

4.4.4 Wired/Wireless Communication Speed Diagnosis

1 **Execute VIVIX Setup** and go to the **Information** tab of the **Diagnosis** dialog.
2 Click **Download** button in **Image Transmission Time** to check image transmission speed of the detector.
3 Click **Start** button in **Throughput Measurement** to check the data traffic per setting time.

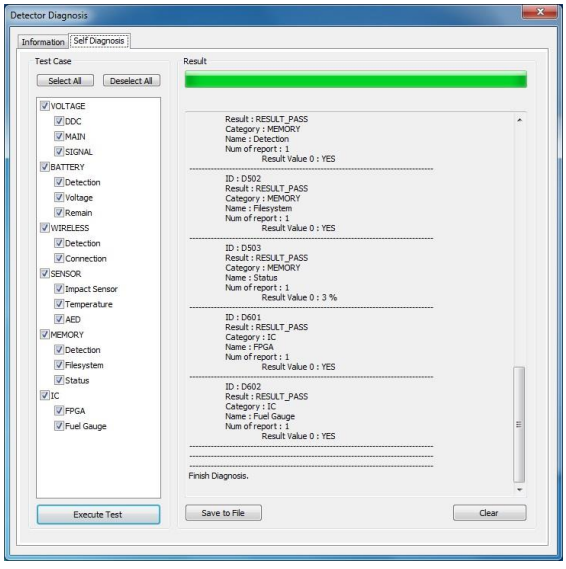


- Refer to **VIVIX Setup Operation Manual** for the detailed information about the communication speed diagnosis.

- Be sure to check the communication environment if there is any problem occurs in the communication speed. Contact the person in charge of service if the problem is related to the communication module of a detector and SCU.

4.4.5 Self Diagnosis

1 **Execute VIVIX Setup** and go to the **Self Diagnosis** tab in the **Diagnosis** dialog.
2 Check the desired items to diagnose from the **Test Case** list.
3 Click **Execute Test** button to perform self-diagnosis.
4 Check the status and result of diagnosis for each item in the **Result** dialog.



- Click **Save to File** button to save the result of a diagnosis as a file and contact the service engineer if any problem is found.

Self-diagnosis items of detector and measures

Voltage

Item	Form	Expected problem	Measures
DDC	Decision	Defective tether interface cable	Change a tether cable.
		Poor power supply to the wired operation mode.	Contact a service engineer.
MAIN	Decision	Poor power supply to the processor.	Contact a service engineer.
SIGNAL	Decision	Poor power supply to FPGA.	Contact a service engineer.

Battery

Item	Form	Expected problem	Measures
Detection	Decision	The battery is not attached.	Check if a battery is attached or not.
		A defective ciruit is connected to a battery pack.	Contact a service engineer.
Voltage	Information	N/A	N/A
Remain	Information	N/A	N/A

Wireless

Item	Form	Expected problem	Measures
Detection	Decision	Defective wireless module	Contact a service engineer.
Connection	Decision	Inconsistent environment of the wireless communication.	Check obstacles and distance between a detector and SCU.
		Defective wireless module	Contact a service engineer.

Sensor

Item	Form	Expected problem	Measures
Impact Sensor	Decision	Defective shock sensor	Contact a service engineer.
Temperature	Decision	Defective temperature sensor	Contact a service engineer.
AED	Decision	Defective AED sensor	Contact a service engineer.

Memory

Item	Form	Expected problem	Measures
Detection	Decision	Impossible to save backup images.	Contact a service engineer.
		Impossible to save logs.	Contact a service engineer.
		The calibration data is inapplicable.	Contact a service engineer.
File system	Decision	Impossible to save backup images.	Contact a service engineer.
		Impossible to save logs.	Contact a service engineer.
Status	Information	N/A	N/A

IC

Item	Form	Expected problem	Measures
FPGA	Decision	Impossible to take images from a detector.	Contact a service engineer.
Fuel Gauge	Decision	Impossible to check the remaining of a battery pack.	Contact a service engineer.

Self-diagnosis items of SCU and measures

Wireless

Item	Form	Expected problem	Measures
Detection	Decision	Defective wireless module	Contact a service eingineer.

Memory

Item	Form	Expected problem	Measures
Detection	Decision	Impossible to save logs.	Contact a service eingineer.
File system	Decision	Impossible to save logs.	Contact a service eingineer.
Status	Information	N/A	N/A

IC

Item	Form	Expected problem	Measures
Switching IC	Decision	Impossible to connect the detector and PC.	Contact a service eingineer.
Current Controller	Decision	Impossible to block overcurrent when using the wired mode.	Contact a service eingineer.

5. Diagnosis and Maintenance

This section gives information about diagnosis and maintenance of the product.

Product Inspection

Cleaning and Disinfection

Product Initialization

Detector Power Save Function (Sleep)

Replacing the Fuse of SCU

5.1 Product Inspection

- To use products safely, make sure to check the products before use. If problems occur during inspection or the product is impossible to repair, consult the sales representative in Vieworks or a relevant engineer.

5.1.1 Daily Inspection

Before or after using the detector and other surrounding devices, check below items daily.

Item	Description
Detector	• Ensure that there are no loose screws or breaks. • Ensure that there is no dust or foreign matter on the battery bay connector. • Ensure that there are no breaks or short-circuits in the battery bay connector.
SCU	• Check if the antenna is damaged.
Cable	• Ensure that cables are not damaged and cable jackets are not torn. • Ensure that the power cord plugs are securely connected to both AC inlet and AC outlet of the equipment.

5.1.2 Performance Inspection

Check the detector and other devices periodically as follows.

Item	Period	Description
Self-Diagnosis	Half-yearly	• Conduct **Self-Diagnosis** of the **VIVIX Setup** program for the internal devices of the detector and check the status.
Resolution	Half-yearly	• Check the resolution of the detector through resolution chart or using a phantom.
Sensitivity	Half-yearly	• Evaluate the characteristic of the detector through checking gray value of the images made by X-ray dose amount reaching to the surface of the detector.
Calibration	Half-yearly	• Updating calibration data. (Offset → Gain → Defect) • Proceed to calibrate when X-ray Generator, Tube, Collimator or exposure environment are changed.

- Self-diagnosis and resolution can be conducted by a user or a service engineer.
- Sensitivity and calibration should be conducted by an authorized service engineer who Vieworks grants.

5.2 Cleaning and Disinfection

After using the detector and peripheral equipments for examination, use germicidal disinfecting wipes or cloth with mild diluted disinfectant detergent to clean surfaces of the product.

- In case the surface or narrow space of equipment is contaminated by contact with blood or other body fluids of a patient, make sure to clean and disinfect it to protect the patients and users from infection.

5.2.2 Recommended Detergent Foam

Recommended disinfectant wipe

- Super Sani-cloth Plus Wipes by PDI
- Sani-cloth Active Wipes multi Surface(Alchol Free/Sans alcool) by PDI
- Sani-cloth CHG 2% by PDI
- Cavi Wipes by Kerr Total Care
- Sporicidal Wipes by Clinell
- Universal Wipes by Clinell

Recommended disinfectant product

- Sulfa'safe by Anios
- Storage temperature: **5°C ~ 35°C**

- Other Disinfectant detergent compliant to conditions listed below may be used following proper procedures according to its own manual.
  - European Biocidal Products designed for surface disinfection (Directive 98/8/EC)
  - Detergent with composition of Didecyldimethylammonium chloride, polyhexamethylene biguamide hydrochloride.

5.2.3 How to Use Detergent Foam

1 Prepare the disinfectant detergent and a clean and dry non-woven cloth.
2 Use the spray bottle to spray detergent to the cloth and clean the equipment.
3 Clean residue on the equipment with its power off.
4 Conduct cleaning once a week or in case of contamination.

- Do not re-use wipes.
- Be careful to use disinfectant detergent which can cause irritation to eyes and skin.
- Use in well-ventilated areas, and wear gloves at all times.
- Do not clean the equipment with its power on.
- Do not use abrasive brush and scraper to clean the product.

	• Be careful not to make liquid soak when cleaning battery bay and the connector on the side of products.

5.3 Product Initialization

If the connection status of system is not stable or setting value is not correct, user can initialize the products.

5.3.1 SCU Initialization

1 Click **Configuration** button of SCU after running the **VIVIX Setup** program.
2 Click **Factory Reset** button in **Configuration** dialogue.
3 Wait for SCU to be initialized and rebooted automatically.
4 Check whether SCU initialization is completed.

Default value of SCU initialization

Item	Default Value
Network	
IP Address	169.254.2.100
Subnet Mask	255.255.0.0
Gateway	169.254.2.100
AP	
AP On/Off	On
Country	South Korea [KR]
Frequency	5GHz
Band	40MHz
Channel	+36
SSID	vivix
Key	1234567890
Security	WPA2-PSK
GI (Guard Interval)	400
Tx Power(%)	100
Test Mode	
On/Off	Off
Period	15 sec
Trigger	
Method	Packet
Polarity	Auto

5.3.2 Detector Initialization

1 Click Configuration button of Detector after running the **VIVIX Setup** program.
2 Click **Factory Reset** button in **Configuration** dialogue.
3 Wait for Detector to be rebooted automatically.
4 Check whether detector initialization is completed.

Default value of detector initialization

Item	Default Value
Network	
IP Address	169.254.1.10
Subnet Mask	255.255.0.0
Gateway	169.254.2.100
WNetwork	
SSID	vivix
Key	1234567890
AP Scan	Off
AP	
AP On/Off	Off
Country	South Korea [KR]
Frequency	5GHz
Band	40MHz
Channel	+36
SSID	vivix_ap
Key	1234567890
Security	WPA2-PSK
GI (Guard Interval)	400
Tx Power (%)	100
Test Pattern Type	Test Pattern Off
Image Timeout Time	20 sec.
Power Management	
Sleep	Off
Sleep After	10 min.
Shut Down	OFF
Shut Down after	30 min.
Power Off	Detector
Wireless Only	Off

5.3.3 Wireless Initialization of Detector

1 Turn off the detector.
2 Press and hold both the power button while installing a battery into the battery compartment of the detector.
3 Keep pressing the power button until the orange LED flickers three times. (It will take about 15 seconds.)
4 Initialization will be conducted when orange LED is flickering, after that, the detector will be turned off automatically.
5 Turn on the detector and check whether detector initialization is completed.

Default value of wireless initialization

Item	Default Value
IP Address	169.254.1.10
Subnet Mask	255.255.0.0
Gateway	169.254.2.100
AP On/Off	Off
SSID	vivix
Key	1234567890
Wireless Only	Off

- When processing the wireless initialization of a detector, only the detector's network information is initialized as a default value.

5.4 Detector Power Save Function (Sleep)

The battery pack can be comsumed slowly by using the power save function.

- The power save function is operated only when the battery supplies power to the detector. In other words, the power save function cannot be operated if a tether interface cable supplies power to the detector.

Types of Power Save Mode

Item	Description
Normal	The detector can be operated and take images at any time.
Sleep	The detector cannot be operated. User can take an image by disabling the Sleep mode.
Shut Down	The detector has been turned off. User can take an image after the detector is rebooted.

Setting Items of Power Save Function

Item	Description
Sleep	Sets whether you use the sleep mode function of the detector or not. (**On** / **Off**)
Sleep after	If the detector is not used for the specific setting time, it is turned to the sleep mode. This mode activates only when the sleep mode is set. (**10 / 15 / 20 / 25 / 30 min.**)
Shut Down	Sets whether you use the shut down function in the detector or not. (**On** / **Off**)
Shut Down after	The power of detector is off if it is not used within the setting time. This menu is activated while the Shut Down function is being used. (**30 / 60 / 90 / 120 min.**)

- Refer to **VIVIX Setup Operation Manaul** for the detailed information about the power save mode functions.

Entry Condition of Power Save Mode (Sleep)

Item	Description
Normal	The detector turns to sleep mode if not used for the setting time (Sleep after).
Sleep	The detector is turned off if not used for the setting time (Shutdown after) under the sleep mode. However, if the detector is not operated during the setting time when it is not in the sleep mode, the detector will be turned off.
Shut Down	The detector turns to sleep mode if not used for the setting time (Sleep after).

Checking Power Save Condition

Item	Description
Normal	All status LEDs are turned on.
Sleep	• The Status LED (Orange) is blinking. • You can check the Sleep status from **VIVIX Setup** or **VXvue**. • **VIVIX SDK** notices the status of **Sleep**.
Shut Down	All LEDs are turned off.

Disabling Power Save Function

Item	Description
Normal	-
Sleep	1 Turns off sleep mode from **VIVIX Setup** or **VXvue** 2 Calls the function from **VIVIX SDK** to turn off sleep mode.
Shut Down	Reboots the detector by pressing a power button on the detector.

Other Information

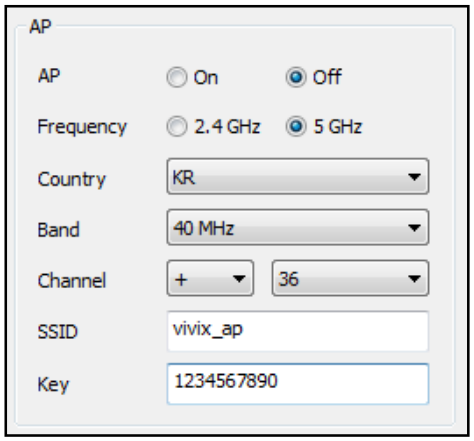
Mode	Default value	Turnaround time	Power consumption
Normal	-	-	24V, Max. 500mA
Sleep	OFF / 10min.	Approx. 10 sec.	24V, Max. 180mA
Shut Down	OFF / 60min.	Approx. 40 sec.	-

5.5 Changing the Wireless Setting

You can switch the detector mode as AP as follows.

Convert to the Detector AP mode from VIVIX Setup

- Choose **AP** as **On** or **Off** from the **Detector Configuration** dialog in **VIVIX Setup** program.



5.6 Replacing the Fuse of SCU

- The description in the section is applicable to the SCU Basic model only.

There are 2 fuses attached on the SCU Basic for the purpose of electrical accident precaution, in case of over current from external power input. Stop using the SCU Basic immediately when the fuse is blown.

Fuse Information

Item	Specifications
Model	Littelfuse® 218002 (2EA)
Type	Time Lag Cartridge Fuse
Amp Rating	2A
Voltage Rating	250V

- Pull the plug out and turn SCU and other devices off before changing the fuse.
- First, resolve the cause why the fuse is blown. Replace the fuse to the one provided as an option (1 set / 2 ea) or to the one with the same specifications.
- Be careful not to touch both the patient and the fuse holder at the same time or let the patient touch the fuse holder.

How to Replace the Fuse

No.		Description
1		Separate the fuse from the holder located power input port on the back side of SCU by pulling the fuse holder.
2		After checking, replace the fuse with correct specifications in case of need.
3	-	Insert the fuse holder again.

6. Troubleshooting

6.1 Troubleshooting

6.1.1 Troubleshooting Guide

When you encounter problems while using the equipment, search for the table below for the problem or error messages and try the solutions.If the problem persists, turn off the detector and consult your sales representative or a distributor. Please refer to the details of the following symptoms or error messages.

- Troubleshooting must be performed by a service engineer authorized by Vieworks. If an unqualified one performs troubleshooting on the system, it results in damage of the detector, software or hardware. Vieworks is not responsible for the detector repair regardless of a remaining warranty. For more information, refer to <8.1 Service Information> and <8.2 Warranty>.

6.1.2 Failed to Turn the Detector On

Category	Description
Symptom	• Failed to turn the power of the detector.
Expected Causes	• The battery pack is attached wrongly. • The battery pack is discharged. • The battery pack or detector is broken down.
Solutions	1 Attach a battery pack 2 Charge a battery pack 3 Check the result after getting rid of a battery and connect the tether cable. 4 Replace other battery packs and check the result. 5 Replace other Detectors and check the result. 6 Replace the corresponding devices.

6.1.3 The Power Switch of SCU or Status LED is not working

Category	Description
Symptom	• The power switch of Basic SCU or SCU mini is not working. • The status LED of SCU is not responding.
Expected Causes	• Power cable is broken down. • Errors in the fuse • Internal circuit is broken down.
Solutions	1 Check the connection between AC power cable and SCU Basic / DC power cable and SCU mini. 2 Turn off the power switch and turn it on again. Check a fan or the back side. 3 Replace the fuse of Basic SCU. (refer to <5.6 Replacing the Fuse of SCU>) 4 Replace another SCU and check the result of it. 5 Replace corresponding devices.

6.1.4 Communication Test is Failed

Category	Description
Symptom	• Transmission error occurred, and the communication test is failed.
Expected Causes	• Network connection problem • Network setting problem • PC environment setting problem • Wireless environment environment problem • Errors in devices
Solutions	1 Check the connection of network cable between Workstation and SCU. 2 Check if the accurate network cable is used or not. (CAT 5E or 6) 3 Set the network information of Workstation, SCU and detector again. 4 Check whole workstation environment again such as firewall setting and release the power save mode. 5 Check surrounding wireless communication environment. 6 Boot up detector and SCU again by processing initialization. 7 Replace other SCU and Detectors and check the result of it. 8 Replace corresponding devices.

6.1.5 The Active LED and Data LED of the Detector are blinking

Category	Description
Symptom	• The active LED and data LED are blinking while power LED is turned ON.
Expected Causes	• Detector registeration error • Data transmission error
Solutions	1 Turn on SCU again. 2 Check the network cable connection. 3 Check the workstation environment and network information again. 4 Check if the surrounding wireless communication is good. 5 Check cable connection again when connected with tether interface cabel 6 Replace other devices and check the result of it 7 Replace corresponding devices.

6.1.6 Errors in Detector LED

Category	Description
Symptom	• All LEDs of a detector are blinking. • Two LED lamps of a detector are blinking and the remaining one is blinking slowly.
Expected Causes	• Internal hardware errors of a detector.
Solutions	1 Reboot the detector and check the result. 2 Replace the detector to another one.

6.1.7 Rapid Consumption of Battery

Category	Description
Symptom	• The fully-charged battery is consumed rapidly.
Expected Causes	• The performance of a detector is decreased by its length of use. • In case of using a battery under in low temperature.
Solutions	1 Replace a battery pack if it is used for a long time. (Battery pack is consumables.) 2 Use a battery pack at room temperature. Charging capacity of a battery pack is decreased in low temperature.

6.1.8 Battery Pack or Installation Part of Battery is Getting Hot

Category	Description
Symptom	• A compartment for installing a battery pack is getting hot.
Expected Causes	• A battery malfunction • Detector failure
Solutions	1 Stop using a battery pack. 2 Contact the service engineer in Vieworks.

7. Regulatory Information

This section gives explanation about regulatory related information including labels and symbols.

Medical Equipment Safety Standards
Radio Frequency Compliance Information
Labels and Symbols
Guidance and Manufacturer Declaration for EMC

7.1 Medical Equipment Safety Standards

7.1.1 Medical Equipment Classification

Item	Description
Type of protection against electrical shock	Class Ⅰ or Internally Powered
Degree of protection against electrical shock	Type B applied parts
Degree of protection against ingress of water	IPX3 (Degrees of protection against ingress of water provided by enclosure)
Operation mode	Continuous operation
Flammable anesthetics	NOT suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide.

7.1.2 Product Safety Standard

South Korea

전기, 기계적 안전성에 관한 시험: IEC 60601-1과 식품의약품안전청고시 제 2009-137호에 따른다.
전자파장해방지에 관한 시험: IEC 60601-1-2에 따른다.

전자파 간섭 (EMI)	
전자파 전도	식품의약품안전청 고시 2009-54호 1종 A급 기기로서 별표 1의 5.1 식품의약품안전청 고시 2009-54호 별표 1의 전자파장해 (간섭)
전자파 방사	식품의약품안전청 고시 2009-54호 1종 A급 기기로서 별표 1의 5.2 식품의약품안전청 고시 2009-54호 별표 1의 전자파장해(간섭)

전자파 내성 (EMS)	
정전기방전(ESD) 시험	식품의약품안전청 고시 2009-54호 별표 2의 36.202/36.202.2/ KN61000-4-2
방사성 RF 전자기장 시험	식품의약품안전청 고시 2009-54호 별표 2의 36.202/36.202.3/ KN61000-4-3
전기적 빠른 과도현상 (EFT) 시험	고시 2009-54호 별표 2의 36.202/36.202.4/ KN61000-4-4
서지(Surge) 시험	고시 2009-54호 별표 2의 36.202/36.202.5/KN61000-4-5
전도성 RF 전자기장 시험	식품의약품안전청 고시 2009-54호 별표 2의 36.202/36.202.6/ KN61000-4-6
전원주파수자기장 시험	고시 2009-54호 별표 2의 36.202/36.202.8/ KN61000-4-8
전원공급 입력선의 전압 강하, 순간정전 및 전압변동 시험	식품의약품안전청 고시 2009-54호 별표 2의 36.202/36.202.7/KN61000-4-11
전원주파수 변동	IEC 60601-1:2007(ed.3) 10.2.2 power supply 및 식품의약품안전청 고시 2009-54호 별표 2의 36.202.14

U.S.A / Canada

Item	
IEC 60601-1(ed.2 am1+ am2+ co1)	Medical electrical equipment- Part1: General requirements for safety
UL 60601-1(ed.2)	-
CSA-C22.2 No. 601-1-M90 (R2006)	Medical electrical equipment – Part 1: General requirements for safety (adopted amendment 2:1995 to IEC60601-1)
IEC 60601-1-2: 2007(ed.3)	Medical electrical equipment-Part 1-2: Collateral standard: Electromagnetic compatibility
IEC 60601-1-4: 2000(ed.1.1)	Medical electrical equipment- Part 1-4: Collateral Standard: Programmable electrical medical systems
IEC 62304:2006	Medical device software-software life cycle processes
ISO 14971:2012	Medical Device- Application of risk management to medical devices

European Union

Item	
MDD (Medical Device Directive)	93/42/EEC as amended by 2007/47/EC
EN ISO 13485:2012	Medical devices – Quality Management systems – Requirements for regulatory purposes
EN 60601-1: 2007(ed.3)	Medical electrical equipment- Part1: General requirements for safety
IEC 60601-1-2: 2007(ed.3)	Medical electrical equipment-Part 1-2: Collateral Standard : Electromagnetic compatibility-Requirements and tests
IEC 60601-1-4: 2000(ed.1.1)	Medical electrical equipment- Part 1-4: Collateral Standard : Programmable electrical medical systems
IEC 62304:2006	Medical device software-Software life cycle processes
ISO 14971: 2012	Medical device – Application of risk management to medical devices.

7.2 Radio Frequency Compliance Information

Country	Item
U.S.A	• FCC Part 15.107 Subpart (b) / 15.109(g) Subpart B • FCC Part 15 Subpart E 15.407 • FCC Part 15 Subpart C 15.247
European Union	• ETSI EN 301 489-1 V1.8.1 (EMC) • ETSI EN 301 489-17 V2.1.1 (EMC) • EN 300 328 V.1.7.1; EN 301 893 V1.6.1 (RF) • EN 62311:2008 (RF Exposure) • ETSI EN 300 328 V1.7.1; EN 301 893, V1.5.1 (Radio Spectrum)
South Korea	• Clause 3, Article 58-2 of Radio Waves Act • Clause 2, Article 58-2 of Radio Waves Act
Japan	• Article 2-1-19, 2-1-19-3, 2-1-19-3-2 of the Radio law (MIC)

7.2.1 FCC Compliance

- This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of **FCC Rules**. These limits are designed to provide reasonable protection against harmful interference in a residential installation.
- Operation is subject to the following tow conditions.
  - This device may not cause harmful interference.
  - This device must accept any interference received, including interference that may cause undesired operation.
- This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measure.
  - Reorient or relocate the receiving antenna.
  - Increase the separation between the equipment and receiver.
  - Connect the equipment into an outlet on a circuit different from where the receiver is connected.
  - Consult the distributor or an experienced radio/TV technician for help.

- Change or modification which is not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
- 5.15-5.35GHz band is restricted to indoor operations only.

- The **SAR** limit set by FCC is 2W/kg (for EU and Japan) and 1.6W/kg (for USA and Korea).
  - This equipment complies with **FCC&CE SAR** regulation.
- The front side of a detector should be used for image acquisition.

7.2.2 FCC SAR

- OET Bulletin 65, Supplement C (Edition 01-01)

7.2.3 CE R&TTE SAR

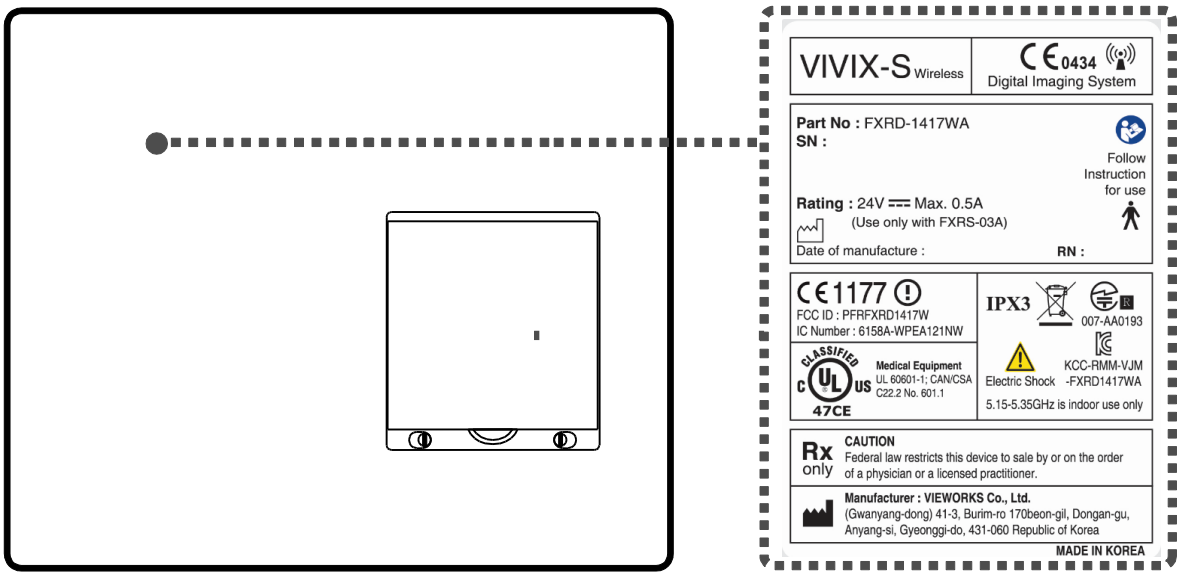
Item	
EN 62311:2008	Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields. (0 Hz - 300 GHz)
EN 62209-1:2006	Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Human models, instrumentation, and procedures. • Part 1: Procedure to determine the specific absorption rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz).
EN 62209-2:2010	Human Exposure to Radio Frequency Fields from Handheld and Body-Mounted Wireless Communication Devices – Human models, Instrumentation, and Procedures. • Part 2: Procedure to determine the specific absorption rate(SAR) for mobile wireless communication devices used in close proximity to the human body (frequency range of 300 MHz to 6 GHz).

7.3 Labels and Symbols

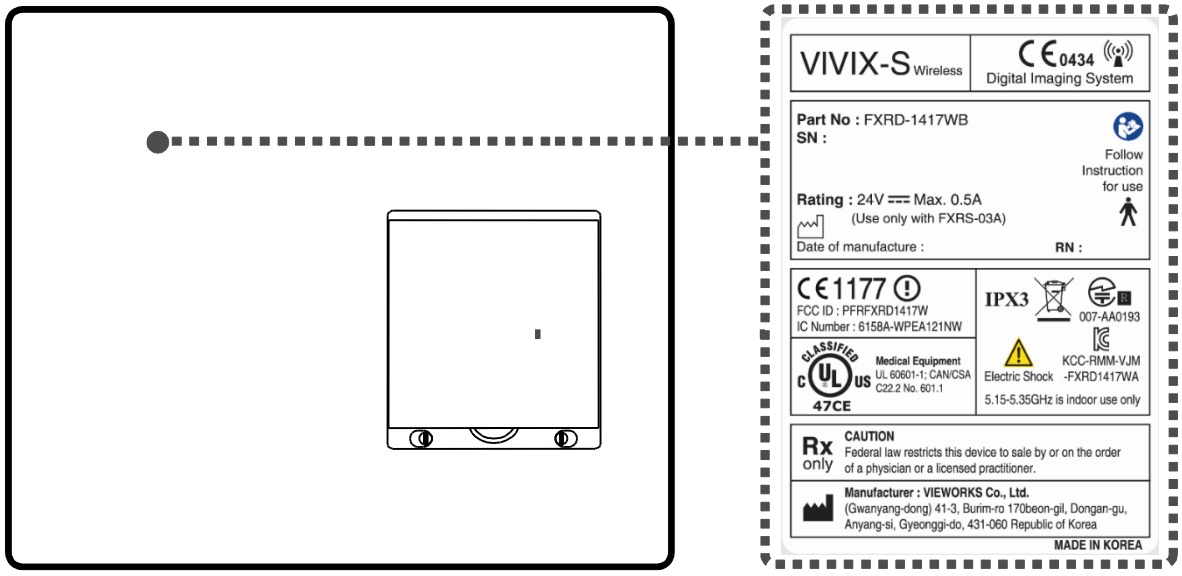
The **VIVIX-S 1417W** wireless detector and other components have labels and markings on them. Their contents and locations are indicated below.

7.3.1 Label

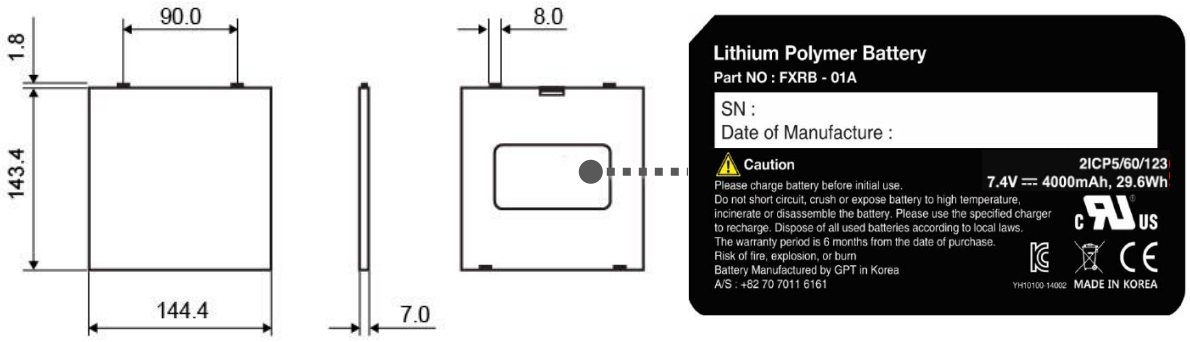
Detector (FXRD-1417WA)



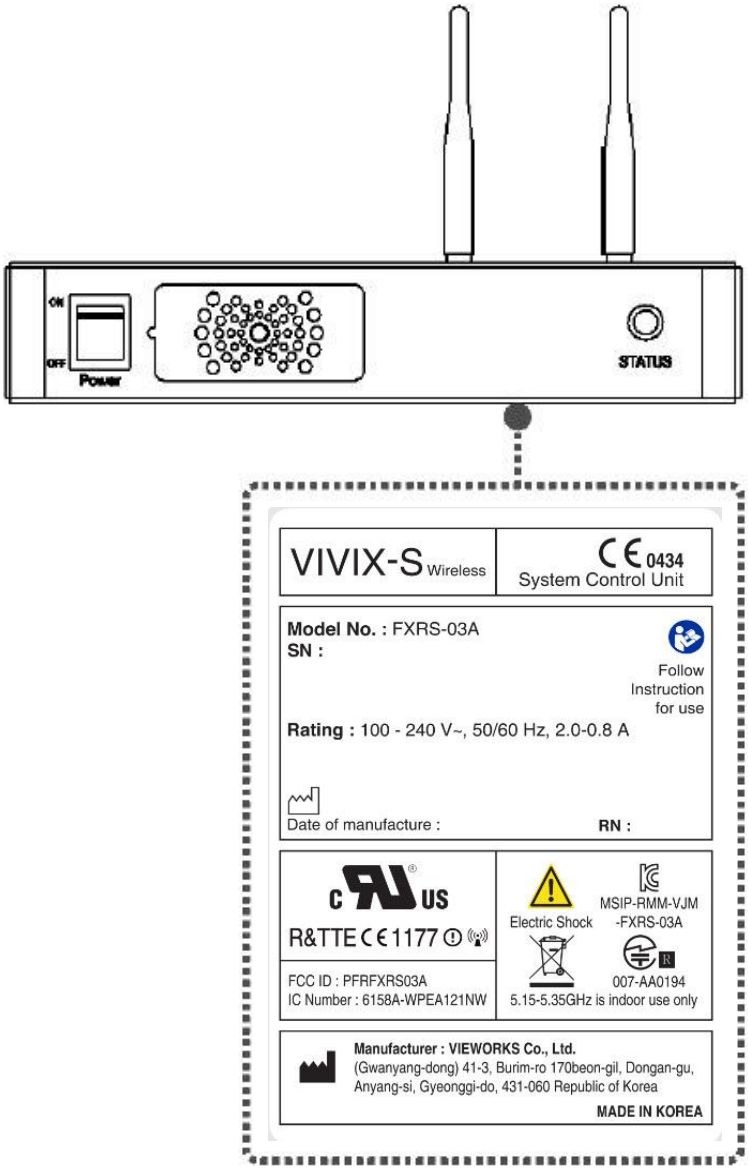
Detector (FXRD-1417WB)



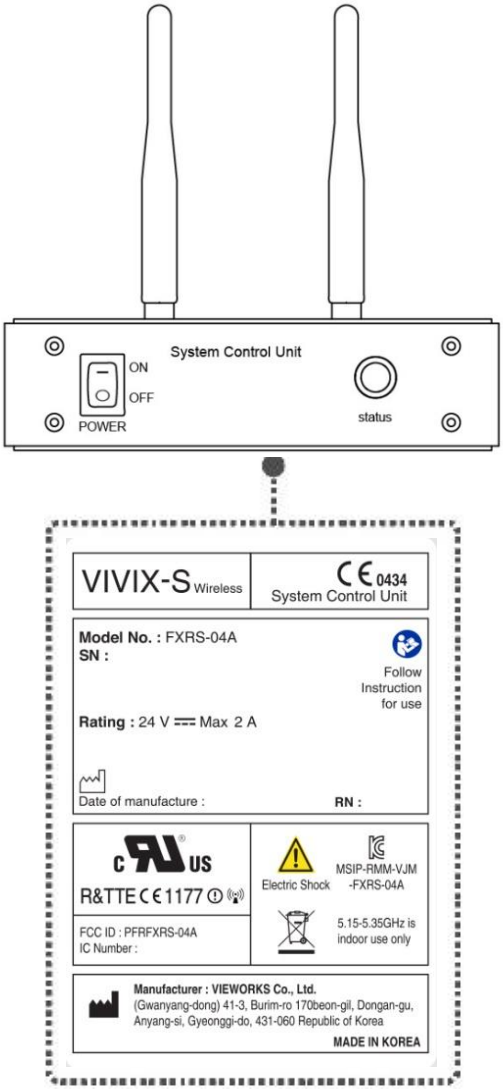
Battery



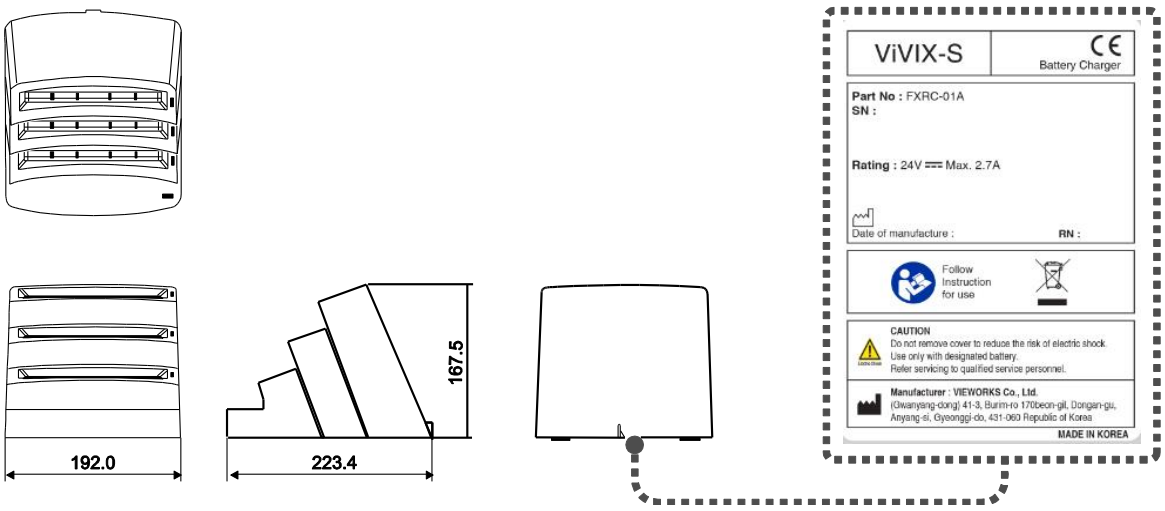
SCU Basic



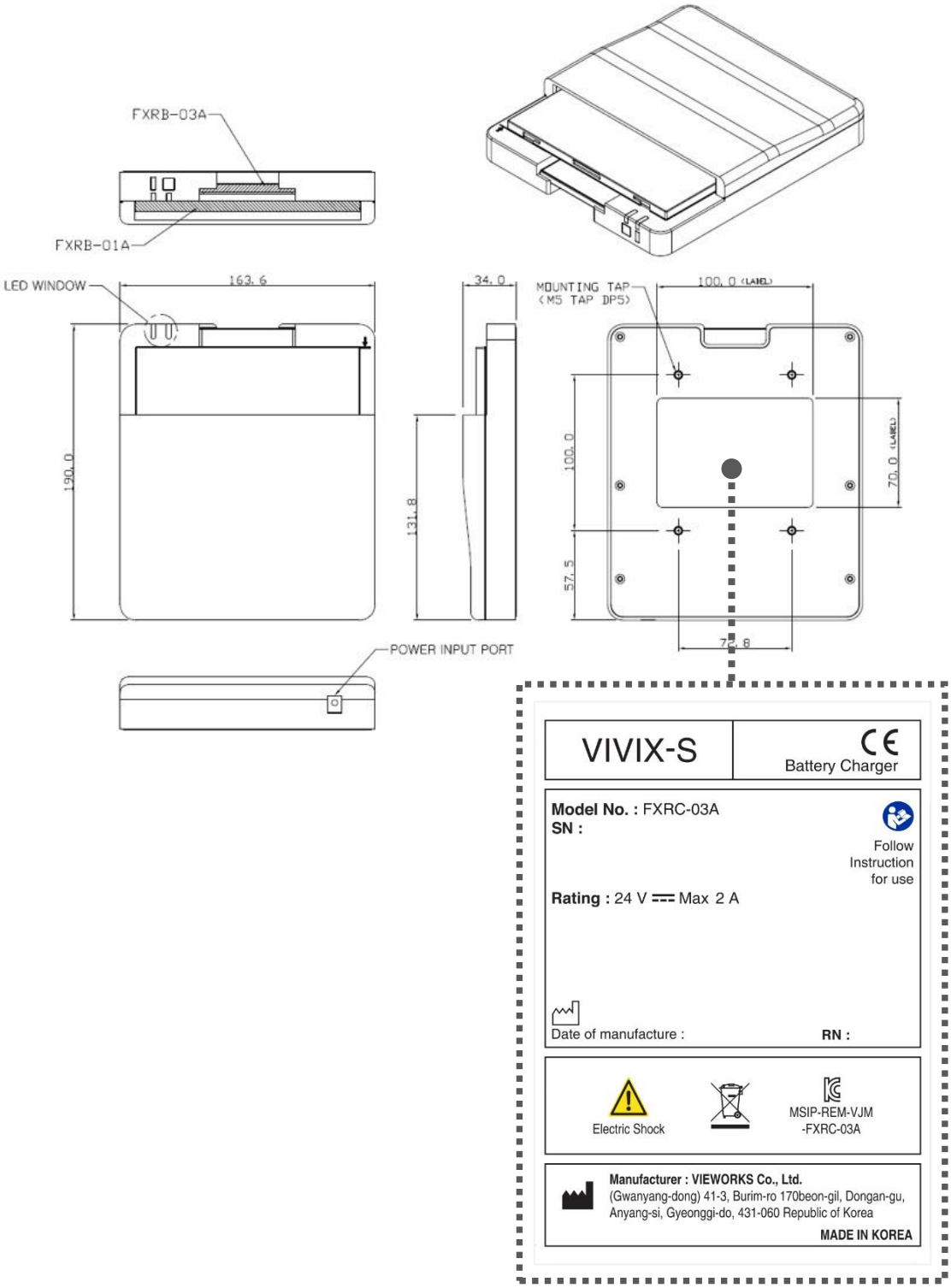
SCU mini



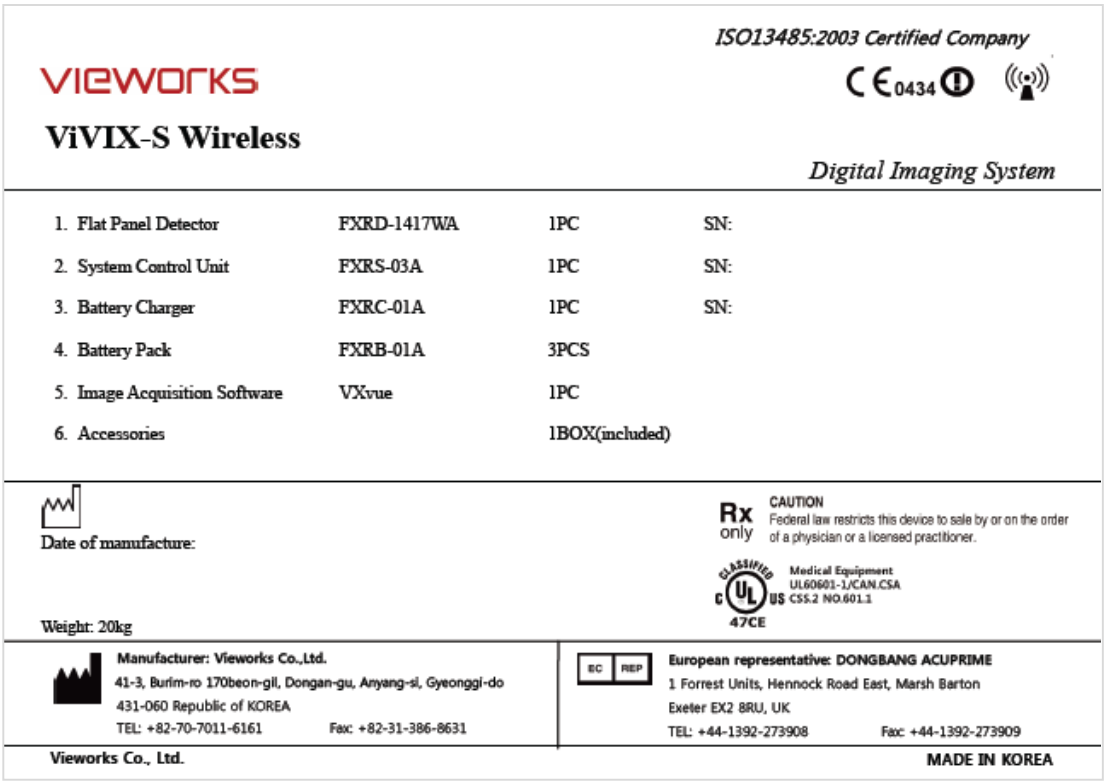
Battery Charger (FXRC-01A)



Battery Charger (FXRC-03A)



Outer Box



ISO13485:2003 Certified Company

VIEWORKS

CE 0434

ViVIX-S Wireless

Digital Imaging System

1. Flat Panel Detector	FXRD-1417WA	1PC	SN:
2. System Control Unit	FXRS-03A	1PC	SN:
3. Battery Charger	FXRC-01A	1PC	SN:
4. Battery Pack	FXRB-01A	3PCS	
5. Image Acquisition Software	VXvue	1PC	
6. Accessories		1BOX(included)	

Date of manufacture:

Rx only

CAUTION
Federal law restricts this device to sale by or on the order of a physician or a licensed practitioner.

Medical Equipment
UL60601-1/CAN.CSA
CSS.2 NO.601.1
47CE

Weight: 20kg

Manufacturer: Vieworks Co.,Ltd.
41-3, Burim-ro 170beon-gil, Dongan-gu, Anyang-si, Gyeonggi-do
431-060 Republic of KOREA
TEL: +82-70-7011-6161 Fax: +82-31-386-8631

EC REP

European representative: DONGBANG ACUPRIME
1 Forrest Units, Hennock Road East, Marsh Barton
Exeter EX2 8RU, UK
TEL: +44-1392-273908 Fax: +44-1392-273909

Vieworks Co., Ltd.

MADE IN KOREA

7.3.2 Product Serial Number

Serial Number Composition

The serial numbers for each product or accessory are composed as follows.

V	1	D	A	B	J	0	0	1
Item		Composition		Year	Month	Serial number		

- Revision will be updated in case of follows.
  - Mass production or a large amount of order.
  - Exterior alteration.
- Item code will be produced based on internal management standard of vieworks.
- Composition code is like follows.
  - **D**: Detector
  - **S**: SCU
  - **C**: Battery Charger
- Range of Serial Number is 001 ~ 999.

Initial Per Year

11	12	13	14	15	16	17	18	19	20
AA	AB	AC	AD	AE	AF	AG	AH	AI	BJ

Initial Per Month

1	2	3	4	5	6	7	8	9	10	11	12
A	B	C	D	E	F	U	V	W	X	Y	Z

Composition of Serial Number for Each Item

Model	Composition	Serial Number
FXRD-1417WA	Detector	V5DAEA001
FXRD-1417WB	Detector	V6DAEA001
FXRC-01A	Battery Charger	V5CAEA001
FXRC-03A	Dual-type Battery Charger	VBCAEA001
FXRS-03A	SCU Basic	V5SAEA001
FXRS-04A	SCU mini	VASAEA001

7.3.3 Product Symbols

Symbol	Description
	Direct current
	Alternating current
	Protective earth (Ground)
	Equipotentiality
	Power on
	Power on for part of the equipment
	Power off
	Power off for part of the equipment
	Attention, consult accompanying documents
	General warning sign
	Warning sign for electricity
	This Mark shows compliance with both Canadian and U.S. safety requirements. With Respect to electric shock, fire, and mechanical hazards only. In accordance with UL60601-1 and CAN/CSA C22.2 No. 601.1.
	This mark shows compliance of the essential requirement and other relevant provisions of Directive 93/42/EEC as amended by 2007/47/EC.
	This mark shows compliance of the essential requirement and other relevant provisions of Directive 2014/53/EU on radio equipment as amended by 1999/5/EC.
	Non-ionizing radiation
	Read and understand all instructions and warning labels in the product documentation before using the equipment. Keep manual for future reference.
	Dealing with a medicine that can only be given by a prescription from a doctor and you should use a certain medication that a doctor recommended.
	General mandatory action sign
	This mark indicates that this equipment must be handled with care.

	Do not jolt or apply excessive load to the equipment.
	This is a Type B Applied Part according to UL 60601-1 and EN 60601-1.
	This mark indicates that the equipment must be collected separately under the Directive on Waste Electrical and Electronic Equipment 2002/96/EC (WEEE) in the European Union. (For European Union)
	This mark indicates that the battery must be collected separately under the Directive on Waste Electrical and Electronic Equipment 2002/96/EC (WEEE) in the European Union. (For European Union)

7.4 Guidance and Manufacturer's Declaration for EMC

- 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.

7.4.1 Electromagnetic Emissions

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

7.4.2 Electromagnetic Immunity

The **VIVIX-S 1417W** wireless system is intended for using in the electromagnetic environment specified below. The user of this system should assure that it is used in the following environment.

Electrostatic Discharge (ESD) IEC 61000-4-2

Item	Description
Immunity test	• Electrostatic discharge (ESD) IEC 61000-4-2
IEC 60601 test condition	• Contact ±6kV • Air ±8kV
Compliance Level	• Contact ±6kV • Air ±8kV
Electromagnetic Environment - Guidance	• Floors should be wood, concrete or ceramic tile. • If floors are covered with synthetic material, the related humidity should be at least 30%.

Electrical Fast Transient/Burst IEC 61000-4-4

Item	Description
Immunity test	• Electrical fast transient/burst IEC 61000-4-4
IEC 60601 test condition	• Power supply lines ±2kV • Input / output lines • ±1kV
Compliance Level	• Power supply lines ±2kV • Input / output lines ±1kV
Electromagnetic Environment - Guidance	• Main power quality should be that of a typical commercial or hospital environment.

Surge IEC 61000-4-5

Item	Description
Immunity test	• Surge IEC 61000-4-5
IEC 60601 test condition	• Differential mode ±1kV • Common mode • ±2kV
Compliance Level	• Differential mode ±1kV • Common mode ±2kV
Electromagnetic Environment - Guidance	• Main power quality should be that of a typical commercial or hospital environment.

Voltage Dips, Short Interruptions and Voltage Variations on Power Supply Input Lines IEC 61000-4-11

Item	Description
Immunity test	• Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11
IEC 60601 test condition	• <5% UT (>95% dip in UT) for 0.5 cycle. • 40% UT (60% dip in UT) for 5 cycles. • 70% UT (30% dip in UT) for 25 cycles. • <5% UT (<95% dip in UT) for 5 sec.
Compliance Level	• <5% UT (>95% dip in UT) for 0.5 cycle. • 40% UT (60% dip in UT) for 5 cycles. • 70% UT (30% dip in UT) for 25 cycles. • <5% UT (<95% dip in UT) for 5 sec.
Electromagnetic Environment - Guidance	• Main power quality should be that of a typical commercial or hospital environment. • If the user of the EUT image intensifier requires continued operation during power mains interruptions, it is recommended that the EUT image intensifier be powered from an uninterruptible power supply or a battery.

• UT is the AC power prior to approving the test level voltage.

Power Frequency (50/60 Hz) Magnetic Field IEC 61000-4-8

Item	Description
Immunity test	• Power frequency (50/60 Hz) magnetic field IEC 61000-4-8
IEC 60601 test condition	• 3 A/m
Compliance Level	• 3 A/m
Electromagnetic Environment - Guidance	• Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.

Conducted RF IEC 61000-4-6 / Radiated RF IEC 61000-4-3

Item	Description	
Immunity test	• Conducted RF IEC 61000-4-6	• Radiated RF IEC 61000-4-3
IEC 60601 test condition	• 3 Vrms 150 kHz to 80 MHz	• 3 V/m 80 MHz to 2.5 GHz
Compliance Level	• 3 Vrms 150 kHz to 80 MHz	• 3 V/m 80 MHz to 2.5 GHz
Electromagnetic Environment - Guidance	• Portable and mobile RF communications equipment should be used no closer to any part of the EUT, including cables, than the recommended separation distance calculated from the below equations applicable to the frequency of the transmitter. $d = [\frac{3.5}{V_1}]\sqrt{P}$ $d = [\frac{3.5}{V_1}]\sqrt{P}$ 80 MHz to 800 MHz $d = [\frac{7}{E_1}]\sqrt{P}$ 80 MHz to 800 MHz • 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 surveya, should be less than the compliance level in each frequency range b. • Interference may occur in the vicinity of equipment marked with the symbol. 	

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

- 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 EUT is used exceeds the applicable RF compliance level above, EUT should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating EUT.
- Over the frequency range 150 kHz to 80 MHz, field strengths should be less than [V1] V/m.

8. Information

This section gives overview information for service and warranty of the product.

Service Information

Warranty

Revision History

8.1 Service Information

8.1.1 Product Lifetime

The estimated product lifetime may be up to seven (7) years under the appropriate regular inspection and maintenance.

8.1.2 Regular Inspection and Maintenance

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

8.1.3 Repair

If a problem cannot be solved even after taking the measures indicated in Troubleshooting and contact your sales representative or a distributor for repairs. Please refer to the name label and provide the following information.

- Product name: **VIVIX-S 1417WA(WB)** Wireless Detector
- Serial number: 9 digit-number on the product label
- Explanation of problem: Describe as detailed as possible.

8.1.4 Replacement Parts Support

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

8.1.5 Consumables

The following consumable can deteriorate because of its characteristics and structure. For purchase of consumables, contact your sales representative or distributor.

- Battery pack: FXRB-01A

8.2 Warranty

Vieworks warrants that this product will be free from defects in materials and workmanship for a period of 24 months from the date of delivery. If any such product proves defective during this warranty period, Vieworks at its option, either will repair the defective product without charge for parts and labor, or will provide a replacement in exchange for the defective product. In order to obtain service under this warranty, Customer must notify Vieworks 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 with shipping charges prepaid.

Vieworks shall pay for the return of the product to customer if the shipment is to a location within the country in which Vieworks 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 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 WITH RESPECT TO THIS PRODUCT IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED. VIEWORKS AND ITS VENDOR DISCLAIM ANY IMPLIED WARRANTIES OF MERCHANTABLILITY OR FITNESS FOR A PARTICULAR PURPOSE. VIEWORKS 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 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

8.3 Revision History

Version	Date	Descriptions
2.0	2013-02-25	• (Added) Initial Release
2.1	2013-04-05	• (Changed) 2.4 Product Components
	2013-05-22	• (Changed) 3.3 SCU (System Control Unit)
2.2	2013-05-22	• (Changed) Detector images/drawings (applied to relevant pages)
	2013-06-13	• (Added) 4.2.3 Allowing VXvue to communicate through Firewall on Windows 7 • (Added) 4.2.4 Disabling Standby Mode in Windows 7 • (Added) 4.2.5 Disabling Power Save mode in Windows 7
	2013-07-01	• (Added) 4.4.7 Defect Correction
	2013-08-06	• (Changed) Contents, Screen shots, etc.
2.3	2013-11-08	• (Changed) System connection mode image • (Changed) Product safety standards • (Changed) Product labels • (Changed) Warranty
3.0	2014-03-11	• (Added) 4.2.1 VXvue VXvue user • (Added) 4.2.2 SDK user • (Changed) 2.4 Product Components • (Changed) 7.2.2 Cleaning and Disinfection • (Changed) 8. Specifications • (Deleted) 4.2.1 VXvue installation • (Deleted) 4.2.3 Allowing VXvue to communicate through Windows Firewall on Windows 7
3.1	2014-03-25	• (Changed) 7.2.3 Function test • (Changed) 8. Specifications
4.0	2014-06-27	• Overall Revised • (Added) 1. Instruction • (Added) 2. Introduction • (Changed) 3. Installation • (Changed) 4. Setting • (Changed) 5. Calibration • (Added) 6. Diagnosis, Inspection and Maintenance • (Added) 7. Troubleshooting • (Changed) 8. Regulatory Information
4.1	2014-07-23	• (Changed) 2.7 Product Specifications • (Added) 5.5 Direct Calibration
4.2	2014-08-22	• Applied the new corporate logo.
4.3	2014-09-02	• (Changed) 5. Calibration
	2014-10-14	• (Changed) Contact address and fax number • (Changed) 3.2.4 Checking Status LED of Detector

		• (Changed) 4.3.1 Detector Configuration • (Changed) 6.2.2 Performance Inspection • (Changed) 8.3.1 Label • (Added) 6.1.3 Wireless Communication Diagnosis
4.4	2014-11-03	• (Changed) Document form
4.5	2014-12-16	• (Changed) Contact address • (Changed) 8.3.1 Label
5.5	2015-09-25	• (Revised) Separated the guidance of VIVIX Setup from this manual. • (Added) Drawings, function and specifications of SCU mini (FXRS-04A) • (Changed) 5. Diagnosis and Maintenance • (Changed) 7.1 Medical Equipment Safety Standards • (Changed) 7.3 Labels and Symbols
5.9	2016-04-28	• (Added) 1.4 Safety Instruction • (Added) 5.2 Cleaning and Disinfection • (Changed) 2 Product • (Changed) 3 System Configuration • (Changed) 4 Settings • (Changed) 7 Regulatory Information
6.1	2016-08-04	• (Changed) 1.3.3 Product Disposal • (Changed) 2.3 FXRS-03A (SCU Basic) • (Changed) 7.3 Labels and Symbols

VIEWORKS

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Fax: +82-31-386-8631
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