VIVIX-S 4386W Service Manual

(FXRD-4386WB)

The specifications and related information in this manual may be changed without notice. Refer to Vieworks Download System (VDS) for the latest version of our manuals.

 This document is basically produced in English, and can be produced in the language of the relevant country upon request of the customer.

Contents

1. Instruction

This section gives basic information of this manual and products.

Document Guide

Product of Use

Clinical Benefits of Product Use

Features

Product Usage Guide

1.1 Document Guide

This Operation Manual explains how to use the **VIVIX-S 4386W** detector made by Vieworks, X-ray interface unit and other peripheral equipment. Use this manual to set up the **VIVIX-S 4386W** detector as well as understand its various functions.

1.1.1 Precautions

Read this manual thoroughly to avoid any accident occurred by negligence.

1.1.2 Target

This manual is intended for the users who set up and operate the **VIVIX-S 4386W** detector.

1.1.3 Symbols

This product should be operated under the safety instructions with the warning or caution symbol in this manual. It is important for you to read and understand the contents to operate the products safely.

Caution

- This symbol is used to indicate a potentially hazardous situation that may cause death, personal injury, or substantial property damage if the instructions are ignored. Users should be well acquainted with this symbol and the related contents.
- Ce symbole est employé pour indiquer une situation potentiellement dangereuse qui peut provoquer la mort, des blessures ou des dégâts matériels importants si les instructions pour une utilisation en toute sécurité sont ignores.

Information

- This symbol is used for indicating product related references and supplementary information. Users are recommended to read the sentences with this notice carefully.
- Ce symbole est utilisé pour indiquer une référence et une information complémentaire. Les utilisateurs sont encouragés à lire cette information avec attention.

1.1.4 Notations

Bold Types

Words in bold indicate products terms, or the sentences which are needed to transmit clear meaning to the customers.

- Among the references specified in this document, some installations and settings are performed by qualified service engineers. For proper product installation and setup, please check the manuals listed in the references or contact your service engineer.
- Parmi les références spécifiées dans ce document, certaines installations et réglages sont effectués par des techniciens de maintenance qualifiés. Pour une installation et une configuration correctes du produit, veuillez consulter les manuels répertoriés dans les références ou contactez votre ingénieur de service.

1.1.5 Contact Us

- This manual is provided in print format upon request by the customer.
- For comments or inquiries regarding this document and relevant products, contact via email below:

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

- You can download this manual from VDS (Vieworks Download System) website: https://clouds.vieworks.com:5001/. To obtain an ID and password for manual download, please contact the customer support team in Vieworks.
- Vous pouvez télécharger ce manuel à partir du site Web VDS (Vieworks Download System): https://clouds.vieworks.com:5001/. Pour obtenir un identifiant et un mot de passe pour le téléchargement manuel, veuillez contacter l'équipe de support client de Vieworks.

1.2 Purpose of Use

1.2.1 Intended Us

VIVIX-S 4386W is a digital flat panel detector that is used for screening and diagnosis of disease of injury. This detector is intended for use by a qualified/trained doctor or technician on both adult subjects for taking diagnostic radiographic exposures of the skull, spinal column, chest, abdomen, extremities, and other body parts.

1.2.2 Patient group

VIVIX-S 4386W is used to examine in patients with or suspected of muscle and bone injury, respiratory diseases. It is intended for general patients such as adults, children, and infants, but all radiography should be reviewed by a doctor in charge prior to beginning the examination.
The radiologist should use a proper technique considering the patient's size to decrease the radiation dose when he or she acquires diagnostic images.

1.2.3 Contra-Indication

These detectors are not intended to be used for mammography applications.

1.3 Clinical Benefits of Product Use

Compared to X-ray exposure to a patient during X-ray imaging using this detector, the benefit of diagnosing a patient's disease or injury is much greater. The digital flat panel detector has superior X-ray image quality compared to the conventional analog film type and enables real-time image transmission and image processing, so that the benefit is much greater in terms of ease of diagnosis and usability compared to electrical risks that may occur.

1.4 Features

- The new sensor with 140 μm of pixel pitch produces high-resolution (approx. 18.87 Mega pixels) digital images.
- The Gadox is provided as a scintillator.
  - FXRD-4386WB –2 Gadoxes (Gadolininum Oxysulfide, 430.08 x 430.08mm) applied.
- This product supports **IEEE 802.11n/ac** and has a wireless communications function, Inside AP™, that shooting is possible everywhere.
- The detector connection status and remaining battery level are visible on the OLED Display.
- Makes direct wireless communication with the built-in wireless AP function. (Inside AP™)
- Quick application of various functions with the two buttons on the side of the detector is available.
- The product supports the stable and reliable Auto Exposure Detection (AED) function. (Anytime™)
- The product can be wired with the tether interface cable according to the operational environment.

1.5 Product Usage Guide

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

1.5.1 Product Usage

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

1.5.2 Disclaimer

1 In no event shall Vieworks be liable for damage or loss arising from fire, earthquake, any action or accident by a third party, 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 are not followed.
4 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.
5 Vieworks shall not be liable for loss of image data for any reason while using this product.
6 Roentgenography, image processing, image reading, and image data storage must be performed in accordance with the laws of the country or religion in which the product is being used.
7 The user is responsible for maintaining the privacy of image data made from this product.
8 It is the responsibility of the attending physicians to provide medical care services. Vieworks will not be liable for faulty diagnoses.
9 Specifications, composition, and appearance of this product may change without prior notice.

1.5.3 Restrictions on the outdoor use (applied to some nations)

There are restrictions on the outdoor use of the U-NII Low (5150-5250 MHz) and U-NII Mid (5250-5350 MHz) bandwidths of the WLAN module incorporated in the device in the following Member States: Belgium (BE), Bulgaria (BG), Czech Republic (CZ), Denmark (DK), Germany (DE), Estonia (EE), Ireland (IE), Greece (EL), Spain (ES), France (FR), Croatia (HR), Italy (IT), Cyprus (CY), Latvia (LV), Lithuania (LT), Luxembourg (LU), Hungary (HU), Malta (MT), Netherlands (NL), Austria (AT), Poland (PL), Portugal (PT), Romania (RO), Slovenia (SI), Slovakia (SK), Finland (FI), Sweden (SE) and United Kingdom (UK).

	AT	BE	BG	CY	CZ
	DE	DK	EE	EL	ES
	FI	FR	HR	HU	IE
	IT	LT	LU	LV	MT
	NL	PL	PT	RO	SE
	SI	SK	UK		

1.5.4 Product Disposal

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

European Union (and EEA*) only

This symbol indicates that this product is not to be disposed with your household waste, according to the WEEE Directive (2012/19/EU) 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

2. Product

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

Product Specifications

FXRD-4386WB

Battery Pack (FXRB-04A)

Battery Charger (FXRC-04A)

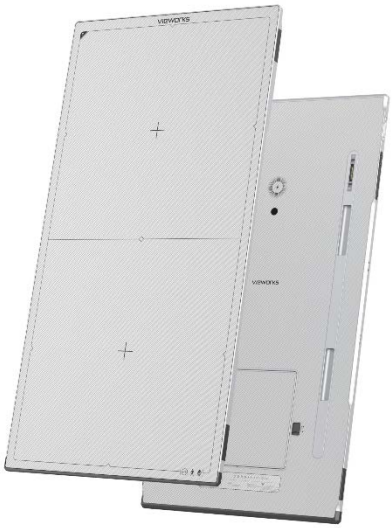
SCU mini (FXRS-04A) – Optional

Wireless Power Transmitter (FXRC-05A) – Optional

Others

2.1 Product Components

2.1.1 Detector

Product Name	Model / Description
VIVIX-S 4386W **Wireless Detector** 	• FXRD-4386WB (8kg) ▫ 2 Battery Packs included

	• There are two tethered interfaces on the side and the rear of the detector, and connection can be made to only one of them. Available interface for connection may vary by clients. • The design of the deco sheet attached to the detector can be different for each customer. • The battery pack is removable from the detector. The battery pack can be replaced at the end of its life. • The two battery packs are basically equipped with FXRD-4386WB. • Il y a deux interfaces attachées sur le côté et à l'arrière du détecteur, et la connexion ne peut être faite qu'à l'une d'entre elles. • L'interface disponible pour la connexion peut varier selon les clients. • Le design de la feuille déco fixée au détecteur peut être différent pour chaque client. • La batterie est amovible du détecteur. La batterie peut être remplacée en fin de vie. Les deux batteries sont essentiellement équipées de FXRD-4386WB.

	• Do not open the tether interface covered with the instrument. If not, a breakdown or electrical shock may occur. • N'ouvrez pas l'interface d'attache recouverte de l'instrument. Sinon, une panne ou un choc électrique peut se produire.

2.1.2 Battery Pack

Product Name	Image	Model / Description
Battery Pack		• FXRB-04A ▫ 3,400mAh ▫ 185g

⚠	• When replacing the battery pack, use only the battery pack specified for the **VIVIX-S 4386W** detector. • Lors du remplacement de la batterie, utilisez uniquement la batterie spécifiée pour le détecteur VIVIX-S 4386W.

2.1.3 Battery Charger

Name	Image	Model/Description
		• FXRC-04A (550g)
Battery Charger		• AC-DC adaptor ▫ ATS090T-P240 / DC 24V, Max 3.75A
		• AC Power Cable • AC 110V (3m, 1EA) / AC 220V (2m, 1EA)

2.1.4 SCU (System Control Unit) – Optional

Name	Image	Model/Description
		• FXRS-04A (1.2kg)
SCU mini (Optional)		• AC-DC adaptor ▫ BPM060S24F10 / DC 24V, Max. 2.7A
		• AC Power Cable • 110V (3m, 1EA) / 220V (2m, 1EA)

- SCU is not a standard item provided to customers. If necessary, you can purchase SCU as an optional device.
- SCU mini supports both wired and wireless connections. If you only need a wireless connection, you can use a separate external AP or detector AP.
- SCU n'est pas un article standard fourni aux clients. Si nécessaire, vous pouvez acheter SCU en tant qu'appareil en option.
- SCU mini prend en charge les connexions filaires et sans fil. Si vous n'avez besoin que d'une connexion sans fil, vous pouvez utiliser un point d'accès externe ou un point d'accès de détecteur séparé.

- When using the SCU for a wired connection, use only the SCU designated for the **VIVIX-S 4386W** detectors. However, you can use an external AP for wireless connection.
- Lorsque vous utilisez le SCU pour une connexion filaire, utilisez uniquement le SCU désigné pour les détecteurs VIVIX-S 4386W. Cependant, vous pouvez utiliser un point d'accès externe pour une connexion sans fil.

2.1.5 Wireless Power Transmitter – Optional

Name	Image	Model/Description
Wireless Power Transmitter (Optional)		• FXRC-05A (80g) • DC Power connector cable (10cm) ▫ Input DC 17V, Max 1.41A

- Wireless power transmitter is not a standard item provided to customers. If necessary, you can purchase it as an option.
- Wireless power transmitter should be wired. The available power voltage is DC 17V±10% (DC 15~19V), up to 24W.
- L'émetteur de puissance sans fil n'est pas un article standard fourni aux clients. Si nécessaire, vous pouvez l'acheter en option.
- L'émetteur de puissance sans fil doit être câblé. La tension d'alimentation disponible est DC 17V±10% (DC 15~19V), jusqu'à 24W.

- Make sure to use the wireless power transmitter only specified for **VIVIX-S 4386W**.
- Assurez-vous d'utiliser l'émetteur de puissance sans fil uniquement spécifié pour le VIVIX-S 4386W.

2.1.6 Accessories

Item	Image	Description
Hardware manual CD		• Detector Operation Manual • Detector Service Manual
Software & Software manual CD (VXvue)		• Software file • Software manual
Cables (Optional)		• VW tether interface cable (7m, magnetic lock) ▫ Connect to the tether interface on the side
		• N tether interface cable (7m, Fix/release holder) ▫ Connect to the tether interface on the rear
		• Generator interface cable (15m)
		• UTP LAN cable (15m, Direct) CAT5E or more than CAT6

Hook Tether **(Optional)**		• Hook Tether/ Screw (M2x4ea) • Fixing VW tether interface cable

- The cable is not a standard item provided to customers. If necessary, the user can optionally purchase the desired cable according to the intended use.
- The tether interface cable is required for the wired connection to the SCU Mini. There are two tethered interfaces on the side and the rear of the detector, and connection can be made to only one of them.
  - With the VW tether interface cable, wire the SCU Mini to the tether interface on the side of the detector.
  - With the N tether interface cable, wire the SCU Mini to the tether interface on the rear of the detector.
- When using DR Trigger or Passive Trigger interface, the generator interface cable should be located between SCU and the generator system.
- Le câble n'est pas un article standard fourni aux clients. Si nécessaire, l'utilisateur peut éventuellement acheter le câble souhaité en fonction de l'utilisation prévue.
- Le câble d'interface Tether est requis pour la connexion filaire à la SCU Mini. Il y a deux interfaces attachées sur le côté et à l'arrière du détecteur, et la connexion ne peut être faite qu'à l'une d'entre elles.
  - Un câble d'interface attaché VW est requis pour la connexion filaire au SCU Mini.
  - Un câble d'interface attaché FW est requis pour la connexion filaire au SCU Mini.
- Lors de l'utilisation de l'interface DR Trigger ou Passive Trigger, le câble d'interface du générateur doit être situé entre le SCU et le système du générateur.

- Use only cables designated for the **VIVIX-S 4386W** detectors.
- 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 follow **IEC 60601-1** 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.

	• L'utilisation d'accessoires et de câbles autres que ceux approuvés et vendus par Vieworks Co., Ltd. peut entraîner une augmentation du dégagement d'ondes électromagnétiques ou une diminution de la stabilité de l'équipement. • Les équipements accessoires connectés aux interfaces analogiques et numériques doivent être certifiés selon les normes IEC respectives. • Toutes les combinaisons d'équipements doivent respecter les exigences du système CEI 60601-1. • Toute personne qui connecte un équipement supplémentaire aux ports d'entrée ou de sortie de signal configure un système médical et est donc responsable de s'assurer que le système est conforme aux exigences de la norme système IEC 60601-1. Consultez votre distributeur ou fabricant si vous avez des inquiétudes.

2.2 FXRD-4386WB

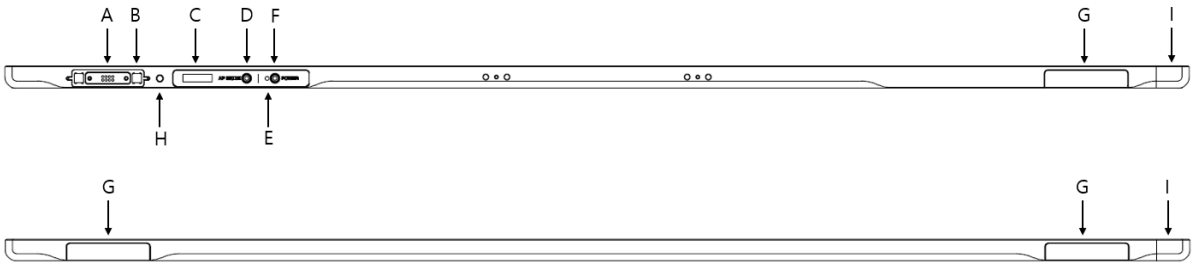
2.2.1 Specifications

Item	Specifications	
Model	• FXRD-4386WB	
Image Scan Mode	• Full mode	• Partial mode
Image Sensor	• a-Si(Amorphous Silicon) TFT with PIN diode	
X-ray Scintillator Type	• Gd2O2S:Tb (Gadolinium oxysulfide)	
Pixel Pitch	• 0.14㎜ (140㎛)	
Field of View	• 43cm x 86cm	• 43cm x 43cm
Active Area (H x V)	• 430.08㎜ × 860.16㎜	• 430.08㎜ × 430.08㎜
Active Array	• 3072 x 6144 pixels	• 3072 x 3072 pixels
Effective Area	• 428.4㎜ × 858.2㎜	• 428.4㎜ × 425.6㎜
Effective Array	• 3060 x 6130 pixels	• 3060 x 3040 pixels
Grayscale	• 16 bit	
Spatial Resolution	• Min. 3.5 lp/㎜	
Image Acquisition Time (Wired)	• Up to 10 sec (Exposure time is set to 500ms / Exposure time is excluded)	• Up 5 sec
Image Acquisition Time (Wireless)	• Up to 10 sec (IEEE802.11ac, MiMO 3x3, 5GHz, 80MHz) (Exposure time is set to 500ms / Exposure time is excluded)	• Up to 5 sec
Recommended Cycle Time	• At least 12 sec (Optimized wired/wireless environment, except for when Exposure time is set to 500ms and when the software is processing the image)	
X-ray Synchronization Control	• AED (Auto Exposure Detection) • DR Trigger (External line trigger) • Software Trigger	
Power Supply	• Supplies power via tether interface cable from SCU: DC 24V, Max. 1.0A • Supplies power with the 2 battery packs: DC 10~13.2V, Max. 78.54Wh • Supplies power with the wireless power transmitter: DC 12V, Max. 1.25A	
Power Consumption	• Max. 24 W	
Operating Time (beginning of a battery life)	• 10hrs (acquires image in every 100 sec.)	
Dimensions (H × W × D)	• 900㎜ × 465㎜ × 17.0㎜	
Weight	• 8kg (including 2 battery packs)	
Image Transmission	• Wired: Gigabit Ethernet (1000BASE-T) via PoE (Power over Ethernet) • Wireless: IEEE 802.11n/ac (2.4GHz/5GHz), with 3 antennas	
Data Transmission Rate (Wired)	• Max. 1Gbps	
Data Transmission Rate (Wireless)	• Max. 300Mbps (IEEE802.11n, MIMO 2x2, 5GHz, 40MHz) • Max. 1300Mbps (IEEE802.11ac, MIMO 3x3, 5GHz, 80MHz)	

- Battery packs lose capacity as they age. This may reduce the operating time of the detector.
- Les batteries perdent de leur capacité en vieillissant. Cela peut réduire la durée de fonctionnement du détecteur.

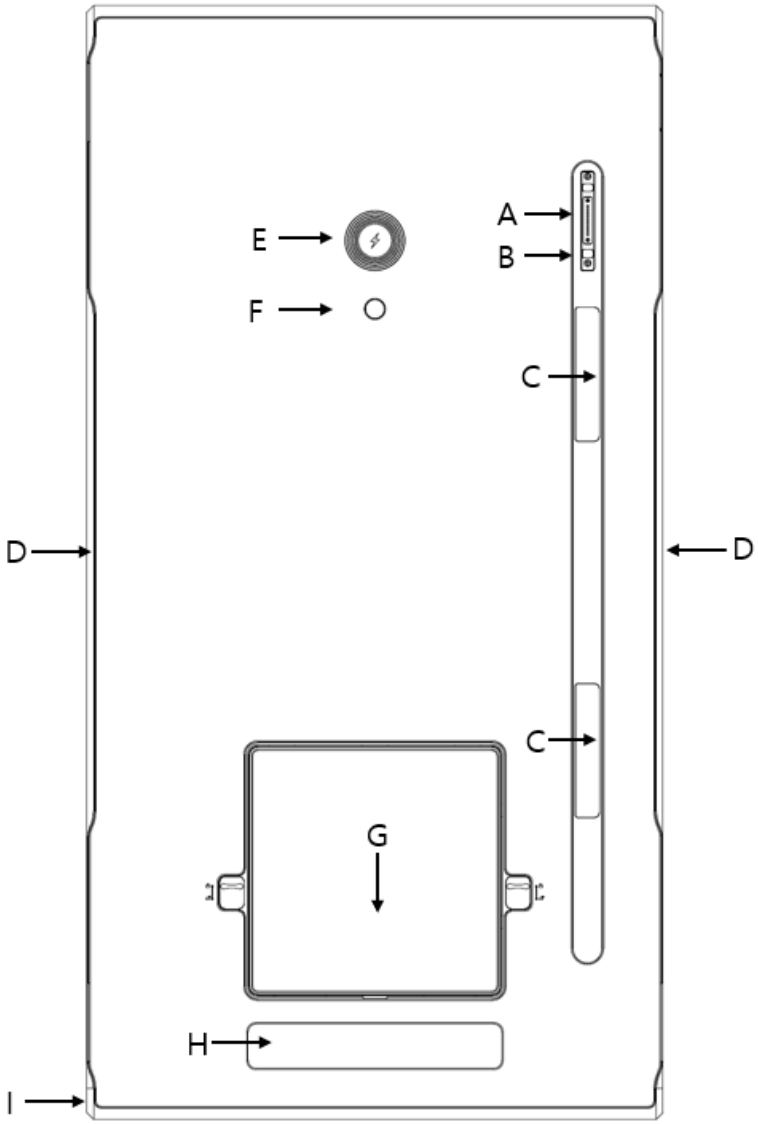
2.2.2 Functions

Side



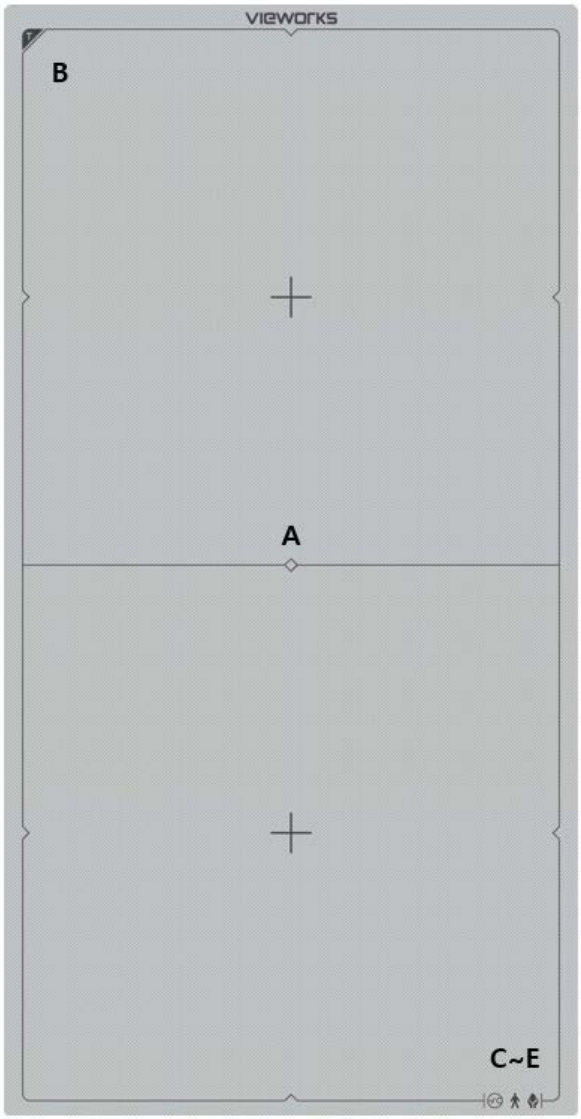
	Name	Description
A	**Tether Interface Connector**	Tether interface cable connector. • Used for wired connection between a detector and SCU.
B	**Magnet for fixing the tether interface**	Used for fixing a tether interface cable
C	**OLED Display**	• Displays battery status • Displays wired / wireless connection status • Displays sleep mode status
D	**AP Button**	• Changes AP settings button in wireless communication (Change detector AP / STAION or change preset in STATION mode) • Changes OLED screen
E	**Power Indicator LED**	• Displays system power status • Displays system boot status
F	**Power Button**	• System power on/off • Changes OLED screen
G	**Antenna for Wireless LAN**	Antennas for wireless communication (3ea)
H	**Charge Status LED**	Displays the charge status of the battery
I	**Xray Transmitting Part**	A part in where X-ray is transmitted

Rear



	Name	Description
A	**Tether Interface Connector**	Tightens the tether interface cable. • Used for wired connection between a detector and SCU.
B	**Tether Interface Holder**	Used for fixing and releasing a tether interface cable
C	**Handle**	Handles to install/uninstall the detector to the equipment
D	**Lift Structure**	Used when the detector is placed on flat surface
E	**Wireless Power Receiver**	Receives wireless power
F	**Infrared LED**	An infrared transmission that controls the wireless power of the detector
G	**Battery Pack Cover**	The cover needs to be opened and closed when replacing the battery pack.
H	**Label**	An area in where the label is attached.
I	**Xray Transmitting Part**	A part in where X-ray is transmitted.

2.2.3 Deco Sheet



	Indication Info.	Description
A	**Center of the detector**	Indicates the central position of detector.
B	**Image starting point**	Indicates the starting point of an original image.
C~E	**Product safety and performance logos**	Notices regarding product safety and performance

- A design of deco-sheet attached to the detector may vary by clients.
- You can change the displayed direction of an image from the **VIVIX Setup** program, but it does not mean that the starting point and direction of the original image are changed.
- La conception de la feuille déco fixée au détecteur peut varier selon les clients.
- Vous pouvez modifier la direction d'affichage d'une image à partir du programme d'installation VIVIX, mais cela ne signifie pas que le point de départ et la direction de l'image d'origine sont modifies.

2.2.4 Wireless Communication

Item	Specifications
Wireless standard	WPT(Passive), IEEE 802.11n/ac
Frequency range	• CE ▫ 2.412 ~ 2.472 GHz (13 channels) ▫ 5.18 ~ 5.24 GHz (4 channels) • FCC ▫ 2.412 ~ 2.462 GHz (11 channels) ▫ 5.18 ~ 5.24 GHz (4 channels) ▫ 5.745 ~ 5.805 GHz (4 channels)
Data transmission rate	Max. 300Mbps (IEEE802.11n, MIMO 2x2, 5GHz, 40MHz) Max. 1300Mbps (IEEE802.11ac, MIMO 3x3, 5GHz, 80MHz)
Modulation	BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM
Transmission power	• CE ▫ 2.4㎓: Max. 14.5 dBm ▫ 5㎓: Max. 15 dBm • FCC ▫ 2.4㎓: Max. 20 dBm ▫ 5㎓: Max 20.5 dBm
Security	WPA2-PSK
Antenna	Dual Band Antennas (3EA, built-in)

• The RF distance between body and product(FXRC-05A) is 20cm.

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

• Please comply with the service environment to prevent the occurrence of a breakdown or electrical shock.

• Veuillez vous conformer à l'environnement de service pour éviter la survenue d'une panne ou d'un choc électrique.

2.3 Battery Pack (FXRB-04A)

2.3.1 Specifications

Item	Specifications
Model	• FXRB-04A
Type	• Lithium Ion Polymer
Nominal Voltage	• DC +11.55V
Nominal Capacity	• 3,400mAh
Number of Cells	• 3S1P (3 Series 1 Parallel)
Battery Life	• Approx. 800 times (One time standard: Fully charged and then fully discharged)
Dimensions (H × W × D)	• 189.0㎜ × 89.0㎜ × 6.65㎜ (max.)
Weight	• 185g (max.)

- The battery capacity slowly diminishes over a long period of usage.
  - Battery replacement should be made at the end of the life of the battery.
- The life expectancy of the battery pack means the number of charging/discharging cycle until it becomes below 80% of the initial storage (nominal capacity).
- La capacité de la batterie diminue lentement au cours d'une longue période d'utilisation.
  - Le remplacement de la batterie doit être effectué à la fin de la durée de vie de la batterie.
- L'espérance de vie de la batterie signifie le nombre de cycles de charge/décharge jusqu'à ce qu'elle devienne inférieure à 80 % du stockage initial (capacité nominale).

2.4 Battery Charger (FXRC-04A)

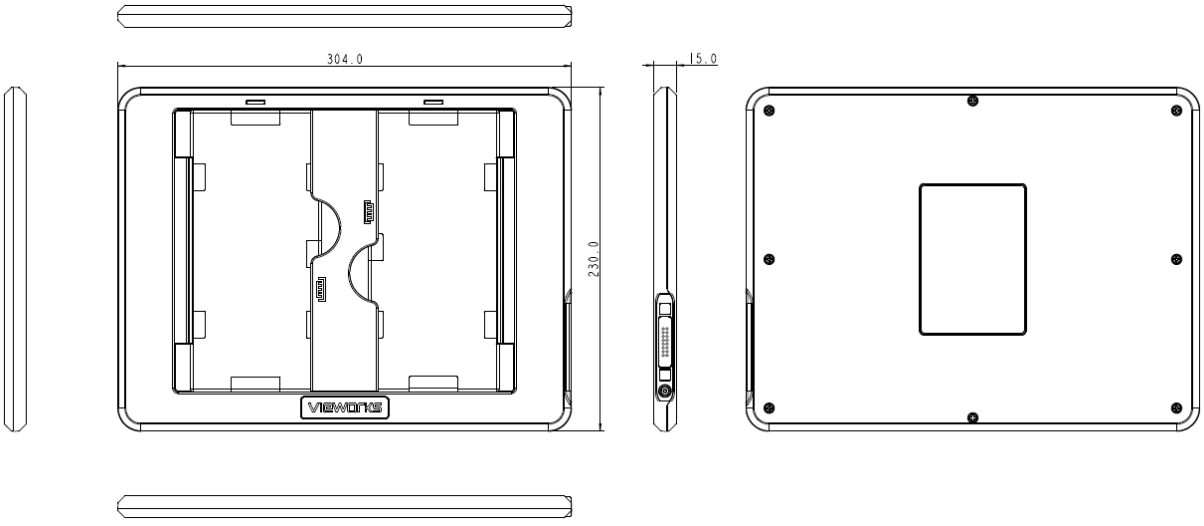
The battery charger quick charges the battery pack provided with the detector.
This device receives power through the provided AC-DC adaptor or the cradle (FXRR-01A).

	• The cradle is not included in this product, and the DC adaptor is the only power supplier. • Le socle n'est pas inclus dans ce produit et l'adaptateur CC est le seul fournisseur d'alimentation.

2.4.2 Specifications

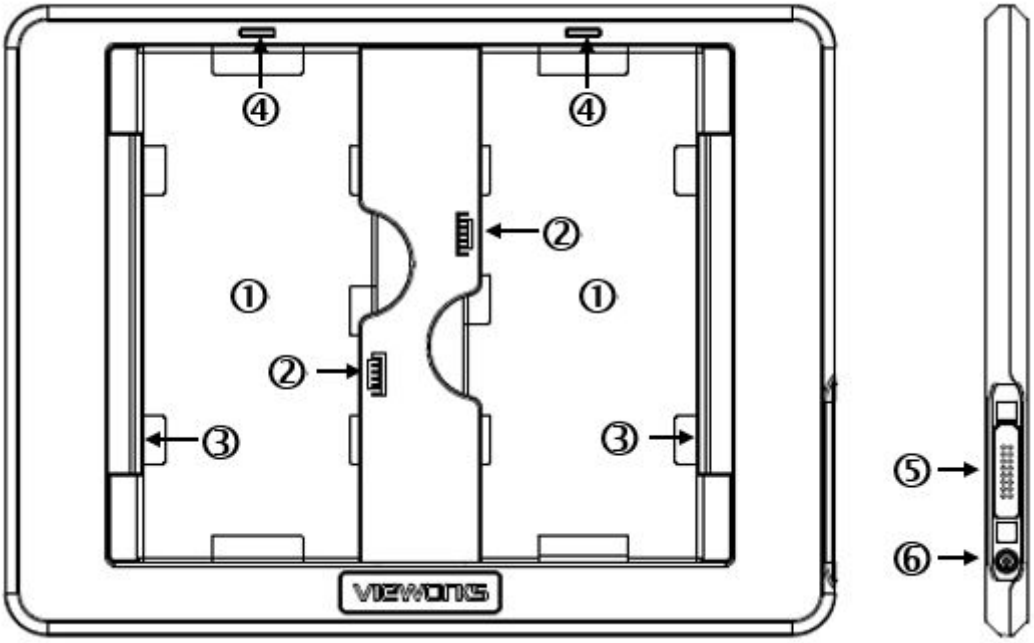
Item	Specification
Model	• FXRC-04A
Power Supply	• Input: DC +24V, Max. 3.33A
Dimension (H × W × D)	• 304.0㎜ × 230.0㎜ × 15.0㎜
Tray	• A and B (2 each)
Weight	• 550g

2.4.3 Drawings



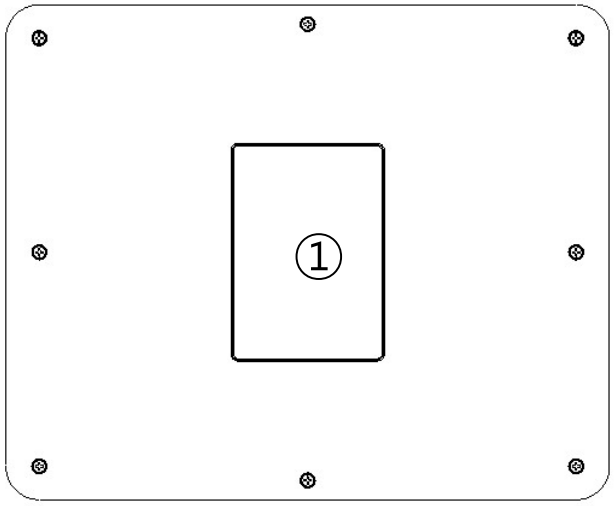
2.4.4 Functions

Front / Side



No.	Item	Description
1	**Battery Tray**	Battery cover
2	**Battery Interface**	Battery link connector
3	**Battery Fixer**	Anchoring device that fixes battery to the tray
4	**Battery Tray State Indicator**	Displays the charging state of the battery equipped in each battery tray • Orange: Charging • Green: Charged
5	**Tether Interface Connector**	Supplies power to the battery charger connected to the tether interface cable or equipped with the cradle
6	**DC Power Input**	DC +24 • Supplies power to the battery charger (Only when in sole occupancy)

Rear



No.	Item	Description
1	**Label**	Label attached part

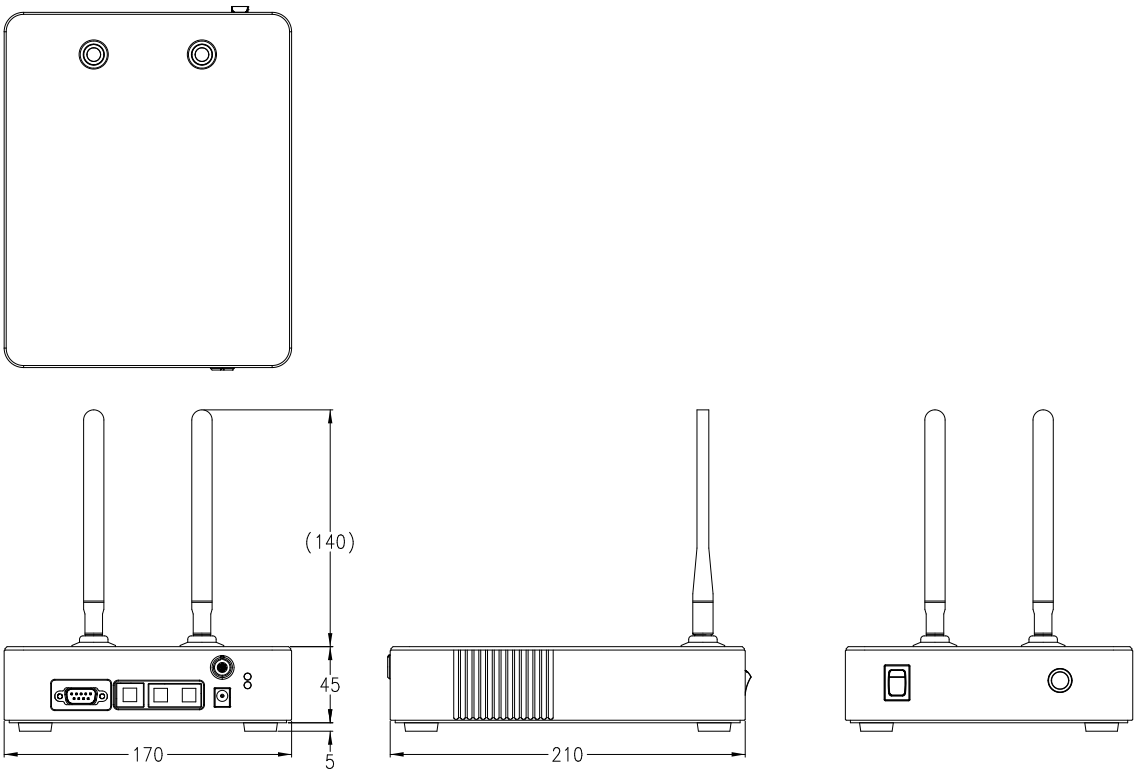
2.5 SCU mini (FXRS-04A) – Optional

SCU mini synchronizes the image and X-ray signal as locating among the detector, workstation, and the X-ray generator. The SCU Mini has a wired or wireless connection with the detector (Wired connection to the workstation). You can also use the DR Trigger with the X-ray generator.

2.5.1 Specifications

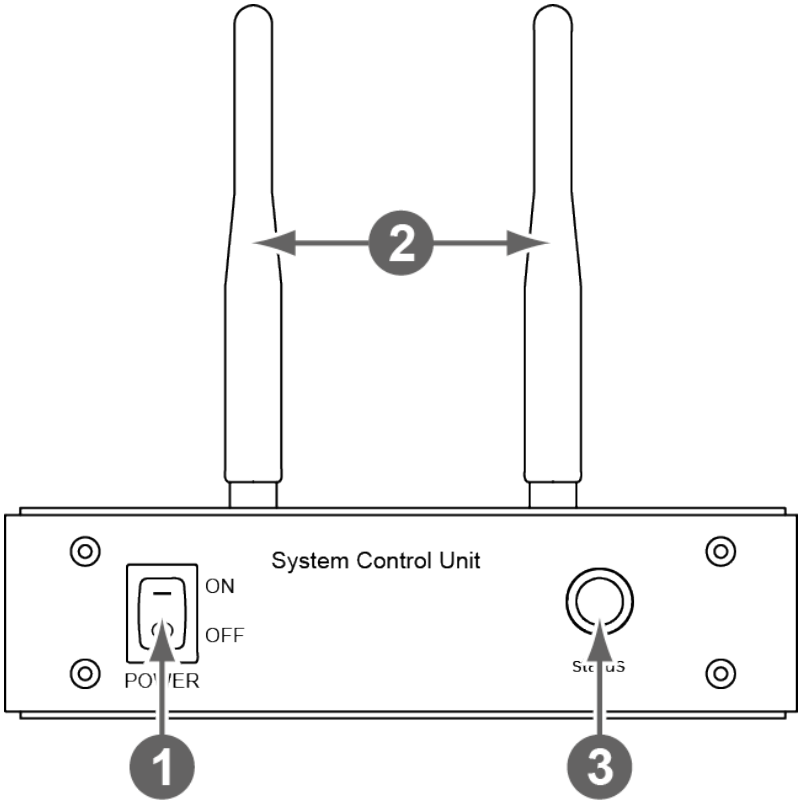
Item	Specification
Model	• FXRS-04A
Power Supply	• Input: DC +24V, Max. 2A
Cable Connection Port	• Gigabit Ethernet port (3ea) • PoE (Power over Ethernet) port (1ea) • X-Ray Generator Interface port (1ea)
Wireless Communications	• IEEE 802.11n (2.4 ㎓ / 5 ㎓)
Dimension (H × W × D)	• 210.0㎜ × 170.0㎜ × 45.0㎜
Antenna	• 140㎜ (2ea, dual band)
Weight	• 1.2kg

2.5.2 Drawings



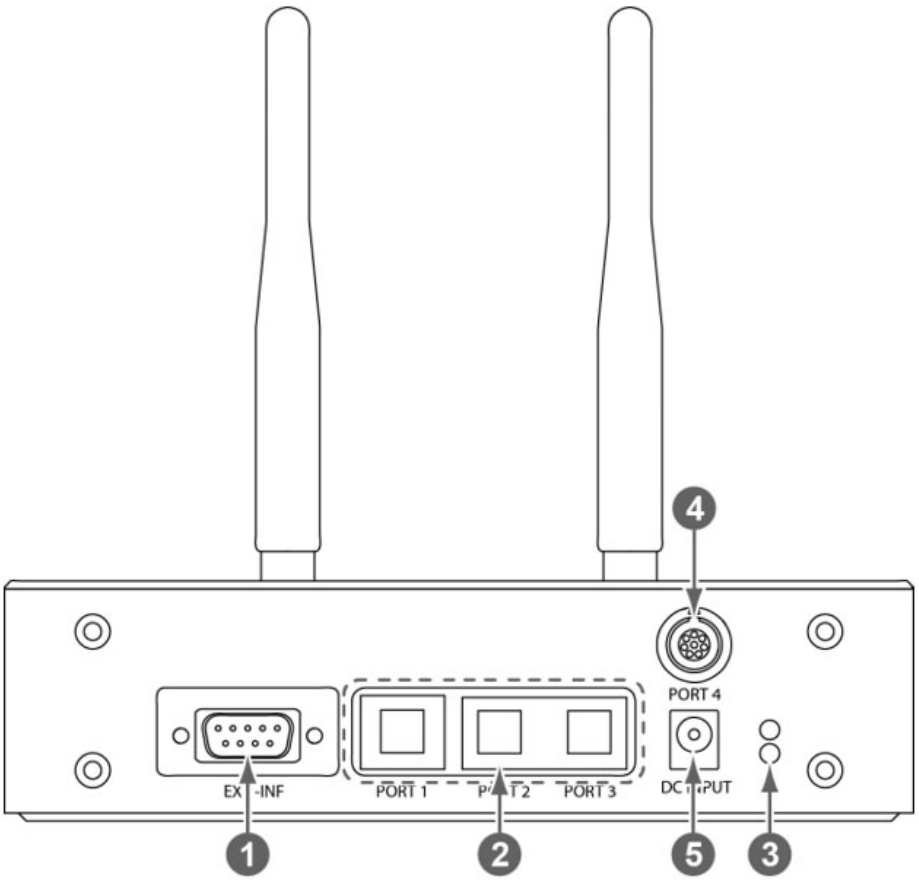
2.5.3 Functions

Front



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 to the software and ready to communicate.

Rear



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 multiple detectors.
3	**PoE status lamp**	Indicates 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.

2.6 Wireless Power Transmitter (FXRC-05A) – Optional

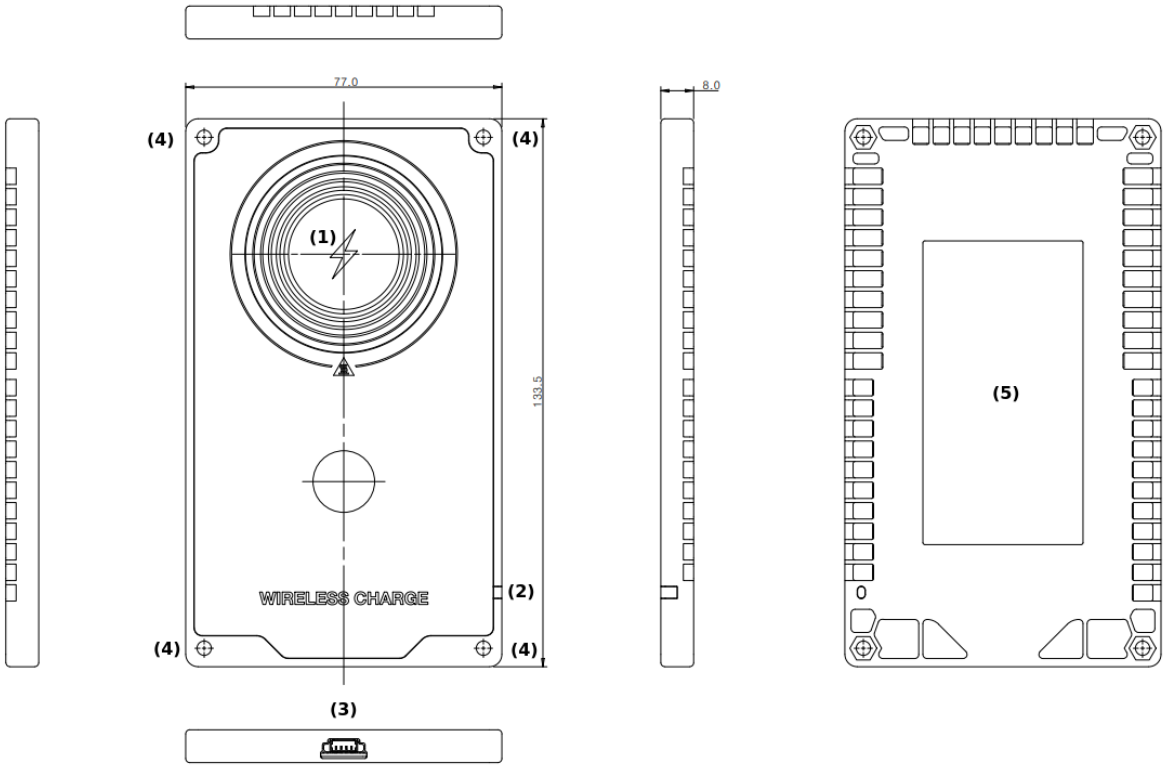
This equipment wirelessly supplies up to 15W of power to the detector. This equipment should be connected to electrical power. The available voltage of power is DC 17V±10% (DC 15~19V), Max. 24W.

- The battery pack should be equipped with when using the wireless power transmitter. Or, the detector may not be successfully operated.
- La batterie doit être équipée lors de l'utilisation de l'émetteur de puissance sans fil. Ou, le détecteur peut ne pas être utilisé avec succès.

2.6.2 Specifications

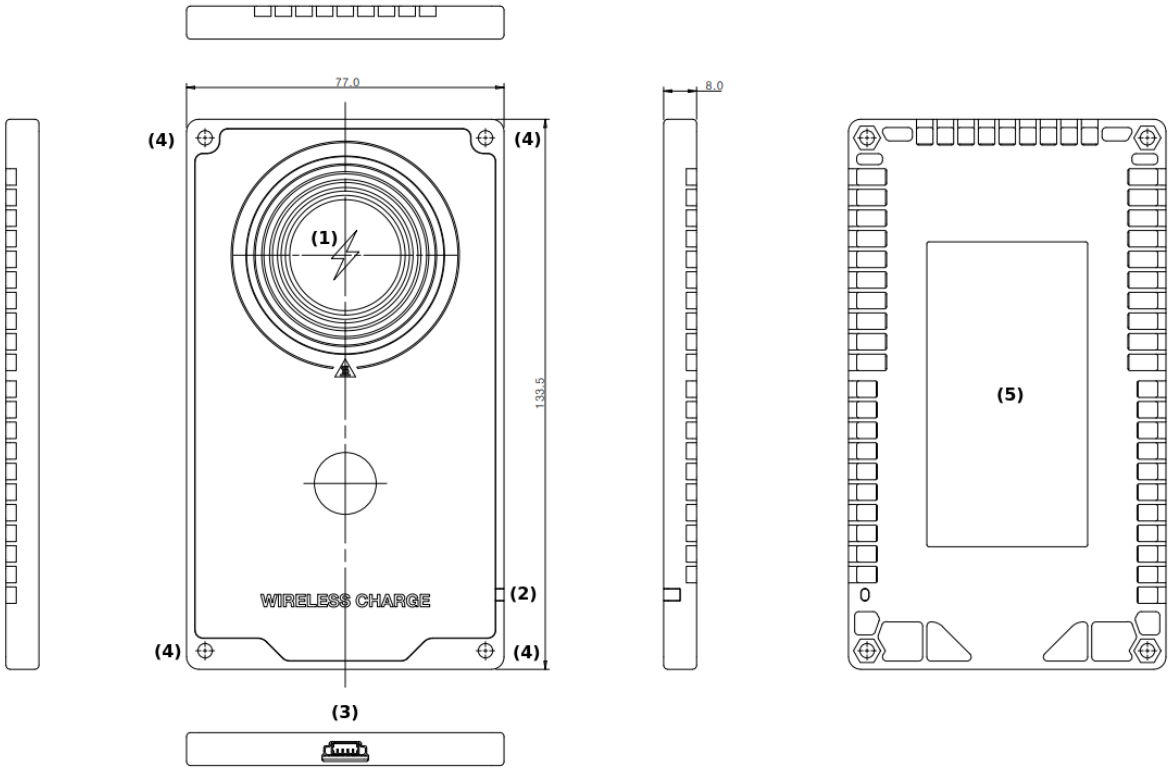
Item	Specification
Model	• FXRC-05A
Power Supply	• Input: DC +17V, 1.41A Max.
Dimension (H × W × D)	• 133.5㎜ × 77.0㎜ × 8.0㎜
Weight	• 80g

2.6.3 Drawings



2.6.4 Functions

Front / Side / Rear



No.	Item	Description
1	**Wireless Power Transmitting Antenna**	Wireless power transmitter
2	**State LED**	Displays active state • OFF : Wireless power transmitter is off • Green : Wireless power is being transmitted. • Orange : Error state
3	**DC Power Input Port**	DC +17V Supplies power to the wireless power transmitter
4	**Setscrew Hole**	Hole that fixes wireless power transmitter (4ea)
5	**Label**	Label attached part
6	**Infrared Optic Acquisition**	Infrared receiver to control wireless power from detector.

- Make sure not touch the parts for 10 seconds after power is off. Otherwise, you may get a burn.
- Assurez-vous de ne pas toucher les pièces pendant 10 secondes après la mise hors tension. Sinon, vous pourriez vous brûler.

2.7 Others

2.7.1 X-ray Generator (Recommended shooting condition)

Item	Recommended condition
X-ray Energy Range	40kVp ~ 150kVp
Lifetime Dose	100Gy

2.7.2 Recommended Specifications of Workstation (PC)

Item	Minimum Specifications	Recommended Specifications
OS	Windows 7 Professional SP1 (64bit) Windows 8.1 Professional (64bit)	Windows 10 Professional (64bit)
LAN Card	• Gigabit Ethernet card (Intel® Series) for detector interface ▫ Speed: 1Gbps ▫ Jumbo Frames: supports 9k ▫ Receive Descriptors: 1024 ▫ 820.11ac (Wireless) • LAN Card for network interface (Separate)	• 1000BASE-T Gigabit Ethernet card (Intel® I210 Series) for detector interface ▫ Speed: 1Gbps or faster ▫ Jumbo Frames: supports 9K ▫ Receive Descriptors: 2K or more ▫ 820.11ac (Wireless) • LAN Card supporting Gigabit for network interface (Separate)
CPU	CPU that supports AVX and SSE	Intel® i5 Quad Core @2.5 ㎓ or more (or compatible with CPU)
Memory	4GB	8GB or more
HDD or SDD	1TB	2TB or more
Monitor	General Monitor : 1280 x 800	General Monitor : 1920 x 1080, 2560 x 1440 Surface pro 4 : 2160 x 1440
CD-ROM		CD or DVD Reader / Writer

- From January 14th, 2020, Microsoft will no longer provide security updates or support for PCs running Windows 7. As this increases your chances of getting infected with new viruses or malware, we recommend upgrading to Windows 10, which continues to offer security updates.
- À partir du 14 janvier 2020, Microsoft ne fournira plus de mises à jour de sécurité ni de support pour les PC exécutant Windows 7. Comme cela augmente vos chances d'être infecté par de nouveaux virus ou logiciels malveillants, nous vous recommandons de passer à Windows 10, qui continue d'offrir des mises à jour de sécurité.

3. System Configuration

This section gives information about the various connection / configuration ways among the detector, SCU, workstation, X-ray generator.

You can figure out the most suitable way of system configuration through this instruction.

Detector Connection Methods

Diagram

System Configuration

Changing the Wireless Setting

Generator Interface

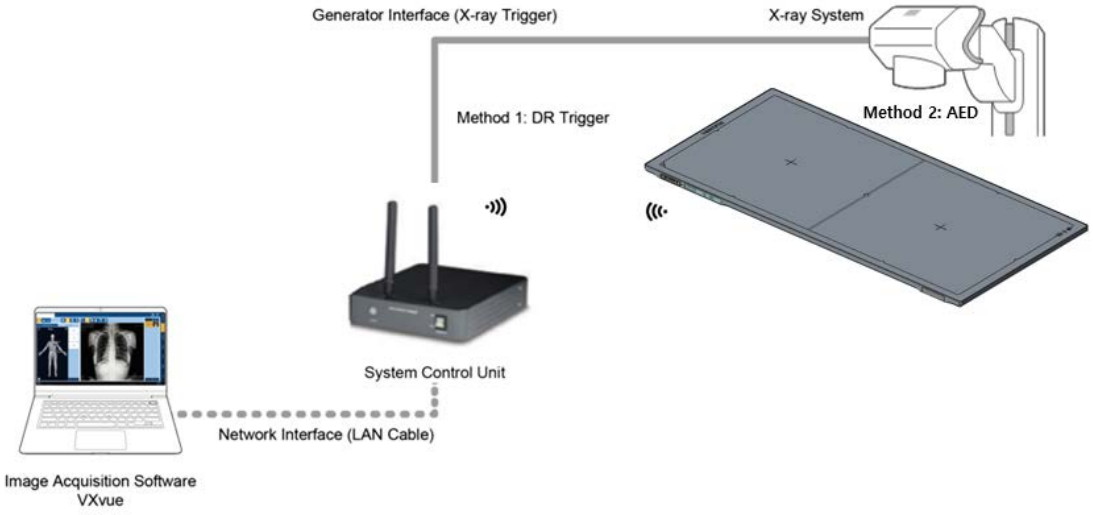
Configuring DR Trigger Interface

Exposure Mode

3.1 Detector Connection Method

You can organize wired or wireless connection between the **VIVIX-S 4386W** detector and SCU. You can also choose other connection ways suitable for the use environment in case of need.

3.1.1 Wireless Connection

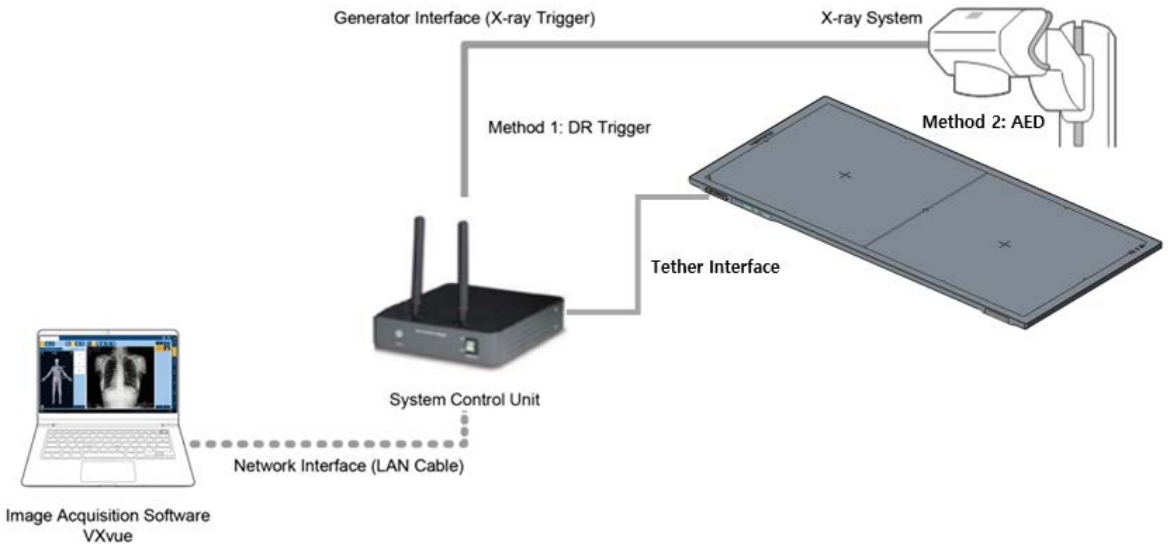


- **VIVIX-S 4386W** and PC (Workstation) connect wirelessly to transfer video and data to a PC.
- Using the SCU mini (FXRS-04A), you can use the DR Trigger interface as well as AED (Auto Exposure Detection) interface with the generator interface.
- Instead of using the SCU mini (FXRS-04A) as an AP, you can use an external AP. In this case, DR Trigger cannot be used.
- If your PC (Workstation) supports Wi-Fi, you can connect directly to your PC using the detector as an AP without a separate AP (SCU, external AP). In this case, DR Trigger cannot be used.
- In a wireless connection, the detector is powered by a battery basically.

- We recommend you 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 devices than the wired connection.
- Use the wireless connection with a laptop computer to enhance mobility.
- Nous vous recommandons d'utiliser la méthode de connexion sans fil dans les cas suivants.
  - Lors de l'utilisation du détecteur non fixé.
  - Lorsque la communication filaire est en difficulté par l'interruption des câbles.
- La connexion sans fil permet de faire fonctionner des appareils plus librement que la connexion filaire.
- Utilisez la connexion sans fil avec un ordinateur portable pour améliorer la mobility.

- Be sure to operate the wireless communication 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 LAN antenna 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.
- Assurez-vous de faire fonctionner la communication sans fil entre le détecteur et le SCU dans un délai maximum de 8 m.
- L'utilisation de plusieurs périphériques WLAN dans la même bande de fréquence peut interférer avec chaque communication sans fil et entraîner une baisse de la vitesse de transmission.
- Ne couvrez pas et ne bloquez pas l'antenne LAN sans fil du détecteur. De plus, ne placez aucun matériau de blindage entre le détecteur et le SCU. Sinon, la vitesse de transmission ou la distance de fonctionnement peut être réduite.

3.1.2 Wired Connection



- The **VIVIX-S 4386W** detector is wired to the PC (Workstation) via the SCU and transmits image and data to the PC.
- Using the SCU mini (FXRS-04A), you can use the DR Trigger as well as AED (Auto Exposure Detection) with the generator interface.
- When the detector is wired, the battery charges while the detector is powered by the tether interface cable.

- We recommend you the wired connection in the following cases.
  - If the detector needs a constant power supply.

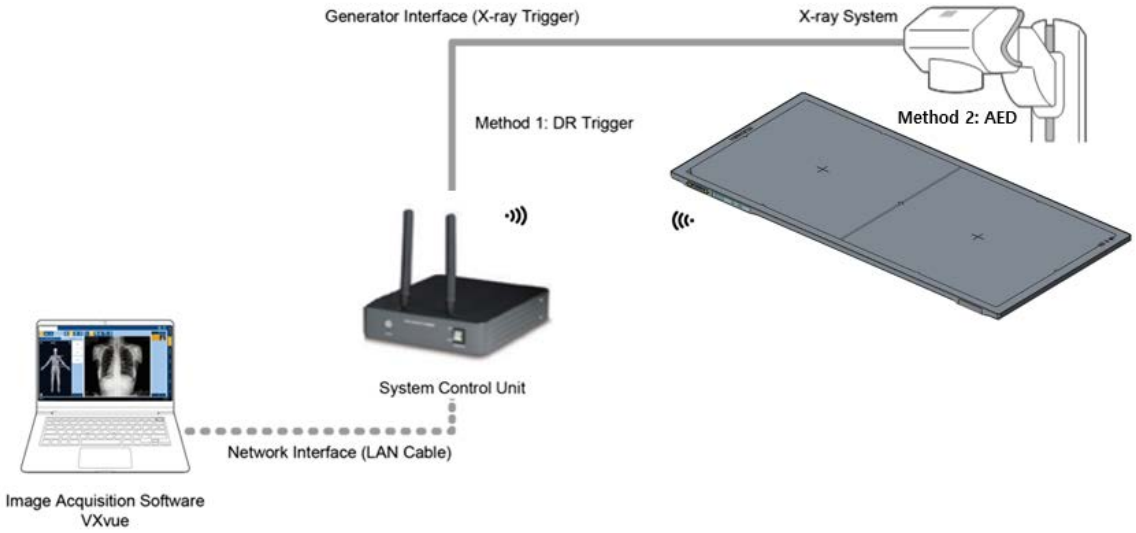
	▫ When the detector is fixed to a bucky stand or a table. ▫ If you want data communication faster than wireless connection. • In a wired connection, wireless communication is disabled. • Nous vous recommandons la connexion filaire dans les cas suivants. ▫ Si le détecteur a besoin d'une alimentation constante. ▫ Lorsque le détecteur est fixé sur un support bucky ou une table. ▫ Si vous voulez une communication de données plus rapide que la connexion sans fil. • Dans une connexion filaire, la communication sans fil est désactivée.

3.2 System Configurationam

This section gives information about the configuration modes of **VIVIX-S 4386W** detectors, SCU, workstation and the generator.

3.2.1 SCU AP Mode

In SCU AP mode, the detector and the SCU mini (FXRS-04A) are connected wirelessly, and the SCU mini and PC are connected by wired.



SCU mini & Detector

- SCU mini and the detector are connected wirelessly. In this case, SCU operates as **AP** (Access Point) and detector as **STATION**.
- Basically, the detector is powered by a battery.

- The SCU mini (FXRS-04A) supports IEEE802.11n and has two antennas, having 40MHz bandwidth. Therefore, SCU AP mode is IEEE802.11n / MIMO 2x2 / 40MHz bandwidth, so the data transfer rate is up to 300Mbps.
- Le SCU mini (FXRS-04A) prend en charge IEEE802.11n et possède deux antennes, avec une bande passante de 40 MHz. Par conséquent, le mode SCU AP est la bande passante IEEE802.11n / MIMO 2x2 / 40MHz, de sorte que le taux de transfert de données peut atteindre 300 Mbps.

SCU mini & PC (Workstation)

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

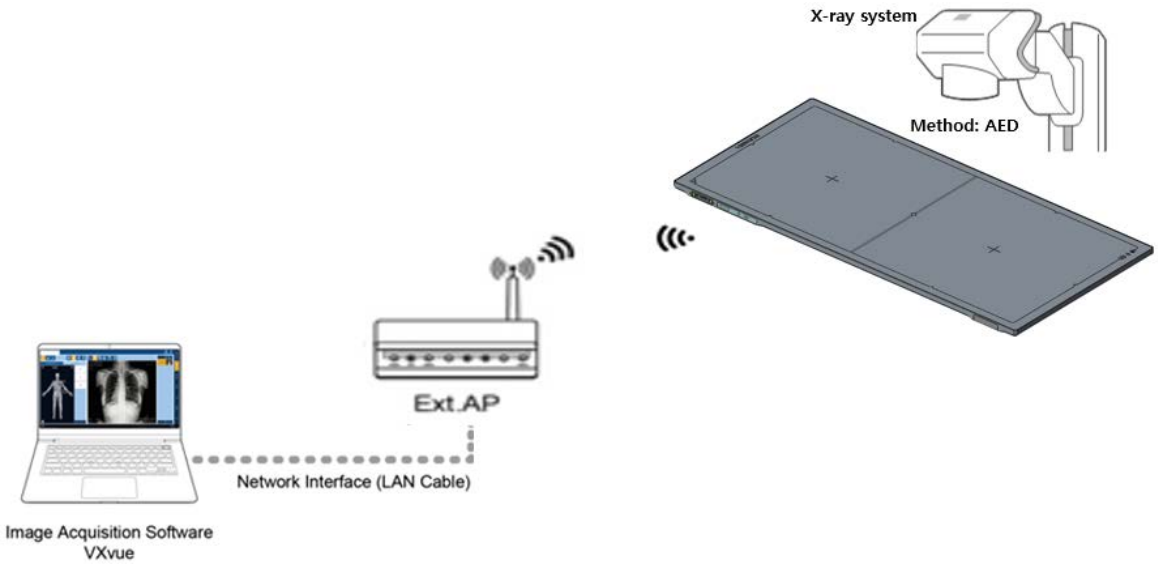
SCU mini & X-ray Generator

- **DR Trigger** interface is available if the SCU mini and the X-ray generator are wired via the generator interface cable.

- If you use the detector's **AED** interface as the generator interface, it is unnecessary to wire the SCU and the generator.
- Si vous utilisez l'interface AED du détecteur comme interface du générateur, il est inutile de câbler le SCU et le générateur.

3.2.2 External AP Mode

External AP mode uses the external AP instead of the SCU mini (FXRS-04A) in SCU AP mode. The detector and external AP are connected wirelessly, and the SCU and PC are wired.



External AP & Detector

- The external AP and **VIVIX-S 4386W** detectors are connected wirelessly. In this case, the external AP and the detector operate as **AP** (Access Point) and **STATION** respectively.
- By default, the detector is powered by a battery.

- For optimum wireless performance, it is recommended to use an external AP that supports IEEE802.11ac and has three antennas with 80MHz bandwidth. For optimal wireless connectivity, the external AP mode is MIMO 3x3 / IEEE802.11ac / 800MHz, so data transfer rate is up to 1300Mbps.
- Pour des performances sans fil optimales, il est recommandé d'utiliser un point d'accès externe prenant en charge IEEE802.11ac et doté de trois antennes avec une bande passante de 80 MHz. Pour une connectivité sans fil optimale, le mode AP externe est MIMO 3x3 / IEEE802.11ac / 800MHz, donc le taux de transfert de données est jusqu'à 1300Mbps.

- 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.
- Assurez-vous de vérifier les spécifications du périphérique AP externe lors de la configuration du mode AP externe, car les performances de communication sans fil peuvent être différentes selon les specifications.

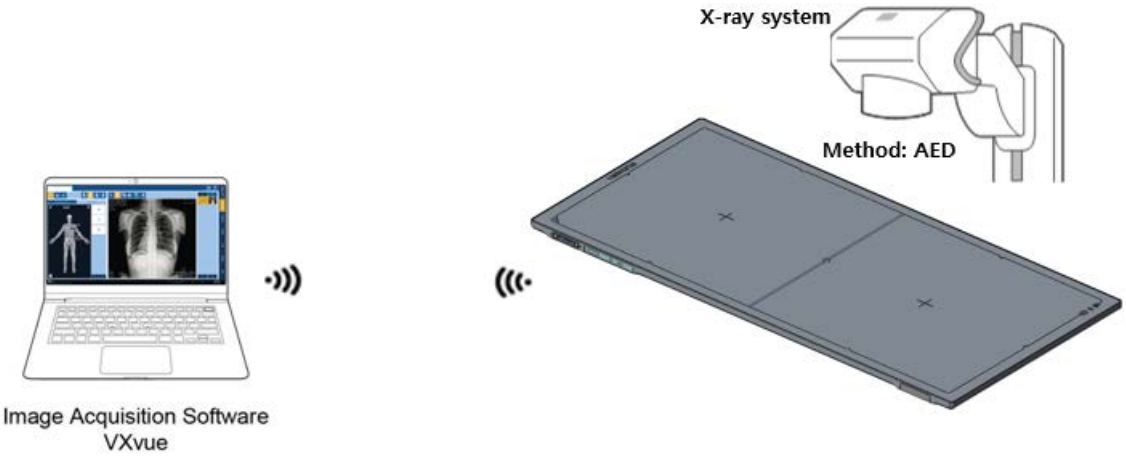
External AP & PC (Workstation)

The external AP and PC are connected to a LAN cable.

- It cannot be wired to the X-ray generator due to non-use of SCU, and **DR Trigger** interface is unavailable.
- Il ne peut pas être câblé au générateur de rayons X en raison de la non-utilisation du SCU et l'interface DR Trigger n'est pas disponible.

3.2.3 Detector AP Mode

Detector AP mode is a method of wirelessly communicating with a PC using a detector as an AP without a separate AP (SCU, external AP).



Detector & PC (Workstation)

- The PC and **VIVIX-S4386W** detectors are connected wirelessly. In this case, the detector operates as an AP (access point) and the PC operates as a station.
- By default, the detector is powered by a battery.

- PC (Workstation) should support Wi-Fi.
- It cannot be wired to the X-ray generator due to non-use of SCU, and **DR Trigger** interface is unavailable.
- You can use this mode to move or carry the product.

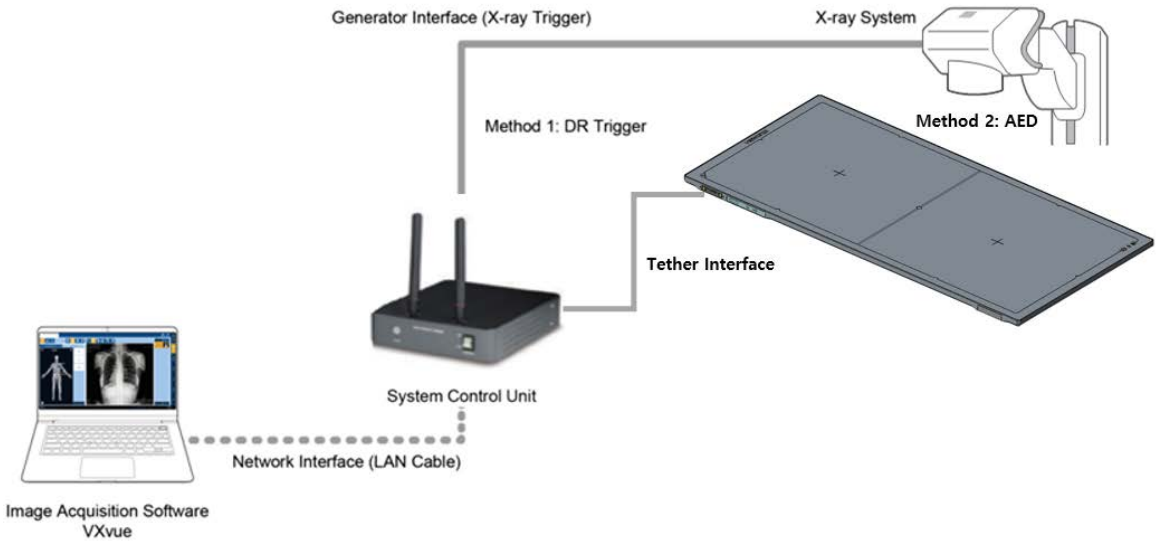
	• Le PC (poste de travail) doit prendre en charge le Wi-Fi. • Il ne peut pas être câblé au générateur de rayons X en raison de la non-utilisation du SCU et l'interface DR Trigger n'est pas disponible. • Vous pouvez utiliser ce mode pour déplacer ou transporter le produit.

	• For optimum wireless performance, it is recommended to use an external AP that supports IEEE802.11ac and has three antennas with 80MHz bandwidth. For optimal wireless connectivity, the external AP mode is MIMO 3x3 / IEEE802.11ac / 800MHz, so data transfer rate is up to 1300Mbps. • Pour des performances sans fil optimales, il est recommandé d'utiliser un point d'accès externe prenant en charge IEEE802.11ac et doté de trois antennes avec une bande passante de 80 MHz. Pour une connectivité sans fil optimale, le mode AP externe est MIMO 3x3 / IEEE802.11ac / 800MHz, donc le taux de transfert de données est jusqu'à 1300Mbps.

	• 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. • Assurez-vous de vérifier les spécifications du périphérique AP externe lors de la configuration du mode AP externe, car les performances de communication sans fil peuvent être différentes selon les spécifications.

3.2.4 Tether Interface Mode

The tether interface mode is a wired connection between the detector and the SCU mini (FXRS-04A) or SCU Lite (FXRP-02A), and the SCU and PC are also wired.



SCU & Detector

- SCU and the **VIVIX-S 4386W** detectors are connected with the tether interface cable.
- Power is supplied from the SCU via the tether interface cable and the battery is charged.

SCU & PC (Workstation)

- SCU and PC are wired using LAN cable.

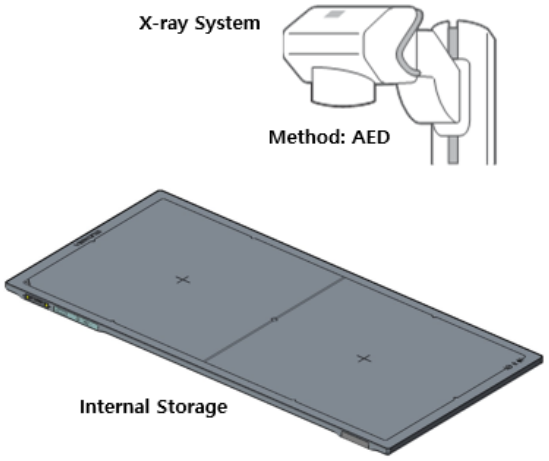
SCU & X-ray Generator

- **DR Trigger** interface is available if the X-ray generator and SCU mini (FXRS-04A) are wired via the generator interface cable.

	• If you use the **AED** interface of the detector as the generator interface, there is no need to wire the SCU to the generator. • Si vous utilisez l'interface AED du détecteur comme interface du générateur, il n'est pas nécessaire de câbler le SCU au générateur.

3.2.5 Detector Stand-Alone Mode

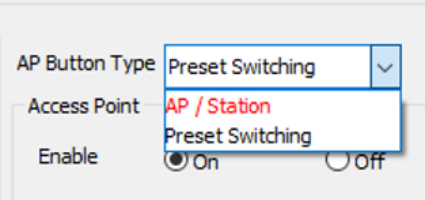
You can use the **Stand-Alone** mode without making a wired or wireless connection.



- Only **AED** trigger interface and software trigger are available. (**DR Trigger** mode is not available.)
- 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.
- Seules l'interface de déclenchement AED et le déclencheur logiciel sont disponibles. (Le mode de déclenchement DR n'est pas disponible.)
- Les images acquises sont stockées dans la mémoire interne du détecteur dans l'ordre et les images peuvent être transmises au PC après avoir connecté le détecteur au PC.
- Les images transmises sont automatiquement supprimées du détecteur.

3.3 Changing the Wireless Setting

In a wireless connection, the **VIVIX-S 4386W** detector provides an external AP button to facilitate changing wireless settings. You can select the function of the AP button in **VIVIX Setup** as follows:



Function	Description
Detector AP / Station	Switch the detector from **AP** to **STATION** or from **STATION** to **AP**.
Preset Switching	If you press the AP button for about 3 seconds while the detector is in STATION, it scans the neighboring APs and automatically changes to the one with the highest signal strength among the detected APs. When changing an AP, change the detector setting that is set for use when connecting with the AP.

In addition, there is a function to synchronize wireless settings over a wired connection.

3.3.1 Detector AP / Station

The AP button allows you to easily switch the detector from STATION mode (SCU AP mode or external AP mode) to AP mode, or from AP mode to STATION mode.

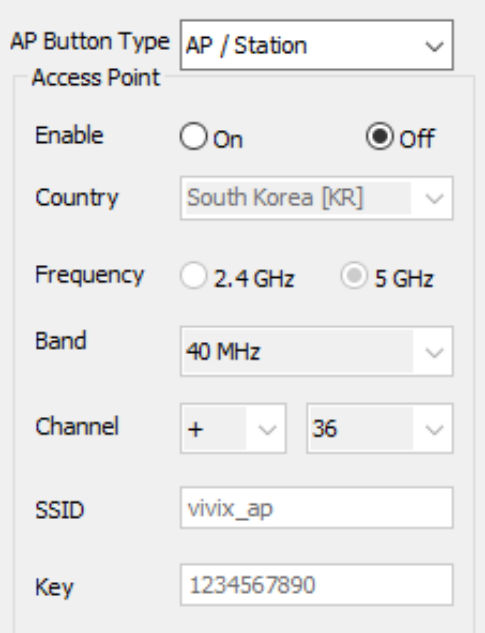
Use the AP Button

1 In the wireless connection, when the detector is STATION, press the AP button for about 3 seconds to switch the detector to the AP. Also, when the detector is an AP, pressing the AP button for about 3 seconds will switch the detector to STATION.

2 During switching, the OLED display shows '**AP Mode Start**' or '**STA Mode Start**'. After switching, you can check the changed settings.

Use VIVIX Setup

1 In the Detector Configuration window of the VIVIX Setup, change the AP settings.

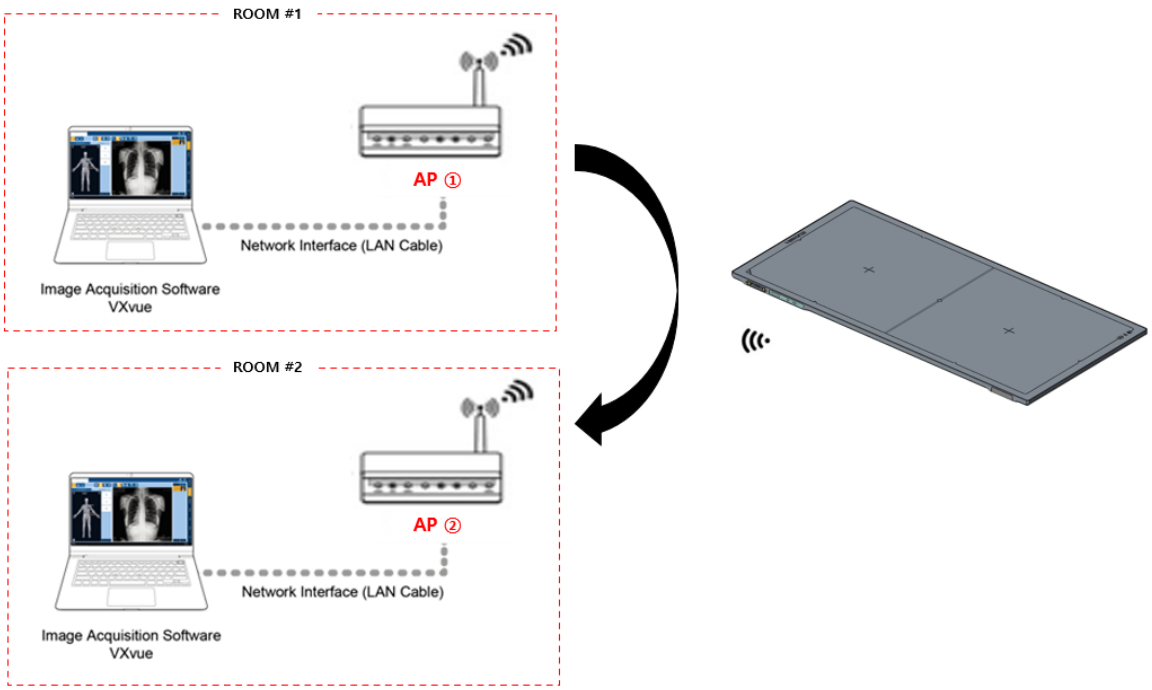


- Available only when tether interface cable is not connected and in wireless communication status.
- Refer to the **VIVIX Setup Operation Manual** for details on the detector AP / Station.
- Disponible uniquement lorsque le câble d'interface d'attache n'est pas connecté et en état de communication sans fil.
- Reportez-vous au manuel d'utilisation de la configuration VIVIX pour plus de détails sur le détecteur AP / Station.

3.3.2 Preset Switching

AP Button

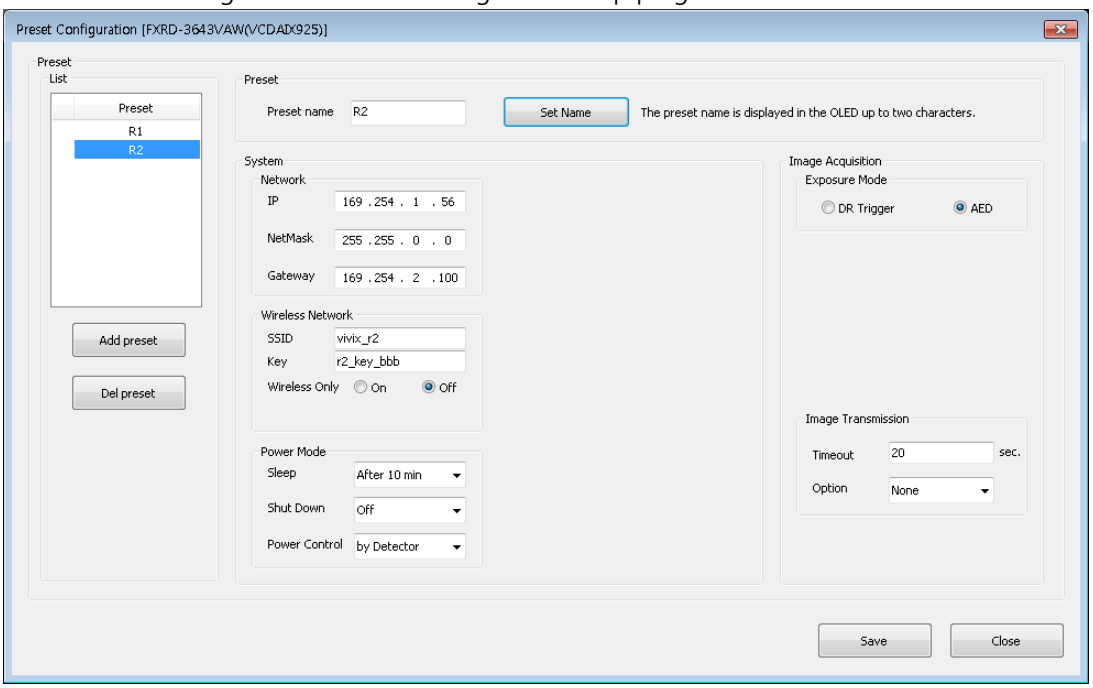
- Using the AP button, you can easily change the external AP when the detector is in STATION.
  - Ex) You can use this function when you have one detector and want to use it in both ROOM # 1 and ROOM # 2. In ROOM # 1, connect wirelessly to AP①, move to ROOM # 2 and press the AP button of the detector for 3 seconds to disconnect AP① and automatically connect to AP②.



- When the detector is in STATION, pressing the AP button for about 3 seconds will scan the surrounding AP and automatically change to the AP with the largest signal strength.

- In order to change AP automatically, the SSID and KEY of the AP to be changed must be registered as a preset in the detector. If you want to connect the detector to an AP in multiple places, you must register the list of AP devices to be connected as a preset list. AP devices not registered in the preset list cannot be automatically connected even if the AP button is pressed.

- Preset list can be registered as follows using VIVIX Setup program.



- The first two letters of the preset name are displayed as the preset identifier on the OLED default screen. Therefore, it is recommended to set the preset name so that it can be distinguished by the first two letters.
  - Ex) Preset names of X-ray ROOM #1 and X-ray ROOM #2 is set to R1 and R2 each.

- After registering the preset list, it is recommended to use the Preset Load function manually to synchronize with the current settings.

- Preset contains the following information as well as the SSID and KEY values of the AP to be connected. Therefore, other settings can be automatically changed according to the room environment where the external AP is located.

Item	Description
Network	IP address, Netmask, Gateway
Wireless Network	SSID and KEY of SCU / external AP Wireless only option
Power Mode	Whether to use Sleep, Shutdown, and Power control
Exposure Mode	DR Trigger, AED
Image Transmission	The time when transmission times out Preview option

Preset Switching

1 While scanning a neighboring AP, '**AP scan**' is displayed on the OLED display.
2 If there is an AP registered in the preset list among the neighboring APs, it is connected to the corresponding AP, excluding the last connected AP, and '**Change AP**' is displayed on the OLED display.
3 When the AP connection is complete, the Preset identifier of the AP is displayed blinking on the OLED default screen.
4 The blinking of the preset identifier lasts 30 seconds. If you press the AP button again for 3 seconds while blinking, AP scanning will not be performed again, and the AP will be connected to the AP with the highest signal strength among the currently scanned AP devices except the currently connected AP.
5 If there are no more accessible APs among the existing AP devices, the Preset identifier will stop blinking. If the AP button is pressed while the flashing stops, the peripheral AP scan is performed again.

- This function is available only when the detector communicates wirelessly in the STATION mode (SCU AP mode, external AP mode). (No tether interface cable connected)
- Refer to the **VIVIX Setup Operation Manual** for details on how to register a preset.
- Cette fonction n'est disponible que lorsque le détecteur communique sans fil en mode STATION (mode SCU AP, mode AP externe). (Aucun câble d'interface d'attache connecté)
- Reportez-vous au manuel d'utilisation de la configuration VIVIX pour plus de détails sur la façon d'enregistrer un préréglage.

3.3.3 Sync Wireless Settings

You can easily switch from tether interface mode to SCU AP mode.

1 In the tether interface mode, press the AP button for about 3 seconds to change the detector to the same SSID and KEY as the wired SCU.
2 During synchronization, the OLED display shows '**Sync WLAN**'. After switching, you can check the changed settings.

- For details on the synchronization of wireless setup, refer to the **VIVIX Setup Operation Manual**.
- Pour plus de détails sur la synchronisation de la configuration sans fil, reportez-vous au manuel d'utilisation de la configuration VIVIX.

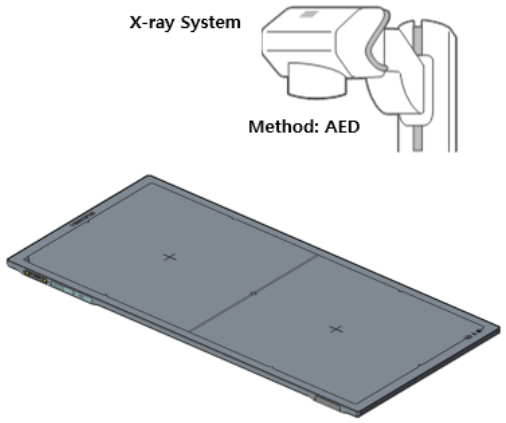
3.4 Generator Interface

VIVIX-S 4386W detector provides **AED** interface, **DR Trigger** interface, and **SW Trigger** interface as a generator interface method to acquire images by detecting X-ray.

Mode	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 mini (FXRS-04A) and X-ray generator should be connected to a generator interface cable.
SW Trigger	The detector and generator receive and send their pre-arranged signal via the workstation for image acquisition

3.4.1 AED (Auto Exposure Detection) Interface

If **VIVIX-S 4386W** detectors are used as the **AED** interface, you can acquire images without connecting the generator to the detector with a generator interface cable. The detector detects the X-ray shot from the generator and automatically starts shooting.



- 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.
- Assurez-vous de respecter les conditions environnementales de fonctionnement (Temp: 10: ~ +35℃).

- Ne pas donner d'impact au produit. S'il reçoit une forte secousse, des images indésirables peuvent être acquises sans exposition aux rayons X en raison du dysfonctionnement du capteur AED.
- Vous ne pouvez pas acquérir d'images ou des artefacts horizontaux peuvent se produire en fonction de l'environnement externe tel que les conditions d'exposition, l'épaisseur de l'objet ou l'utilisation de la grille.
- Lorsque vous réglez la zone d'exposition aux rayons X dans la direction du détecteur, le centre du détecteur doit être impliqué dans la zone d'exposition aux rayons X. Sinon, vous risquez de ne pas acquérir une image.

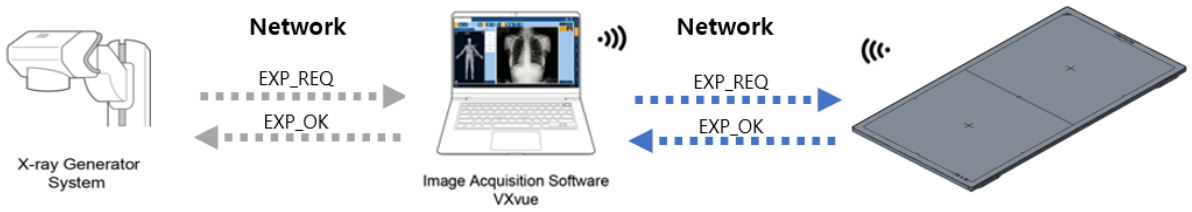
3.4.2 DR Trigger Interface

To form **VIVIX-S 4386W** detector as a **DR Trigger** interface, the generator should transmit EXP_REQ signal to the detector through SCU. The detector sends the EXP_OK signal to the generator once it is ready for exposure, and the generator synchronizes the signal to shoot X-ray.

- **EXP_REQ** is a shooting request signal sent by the X-ray generator to the detector.
- **EXP_OK** is a ready-for-exposure signal sent from the detector to the X-ray generator. Therefore, X-ray generator should not be proceeded until the EXP_OK is activated.
- EXP_REQ est un signal de demande de tir envoyé par le générateur de rayons X au détecteur.
- EXP_OK est un signal prêt à l'exposition envoyé du détecteur au générateur de rayons X. Par conséquent, le générateur de rayons X ne doit pas être utilisé tant que EXP_OK n'est pas activé.

3.4.3 SW Trigger Interface

To form **VIVIX-S 4386W** detector as a **SW Trigger** interface, the generator should transmit EXP_REQ signal to the detector through workstation. The detector sends the EXP_OK signal to the generator through workstation once it is ready for exposure, and the generator synchronizes the signal to shoot X-ray.



- To use this interface, you should set the detector to the DR trigger mode and the X-ray exposure time to 800ms or longer.
- The system configuration (SCU AP mode, External AP mode, Detector AP mode, and Tether interface mode), except for the Stand-Alone mode, is available.
- **EXP_REQ** is a shooting request signal sent by the X-ray generator to the detector through workstation.
- **EXP_OK** is a ready-for-exposure signal sent from the detector to the X-ray generator. Therefore, X-ray generator should not be proceeded until the EXP_OK is activated.
- Pour utiliser cette interface, vous devez régler le détecteur sur le mode de déclenchement DR et le temps d'exposition aux rayons X sur 800ms ou plus.
- La configuration du système (mode SCU AP, mode AP externe, mode AP de détecteur et mode d'interface Tether), à l'exception du mode autonome, est disponible.
- EXP_REQ est un signal de demande de tir envoyé par le générateur de rayons X au détecteur.
- EXP_OK est un signal prêt à l'exposition envoyé du détecteur au générateur de rayons X. Par conséquent, le générateur de rayons X ne doit pas être utilisé tant que EXP_OK n'est pas activé.

3.5 Configuring DR Trigger Interface

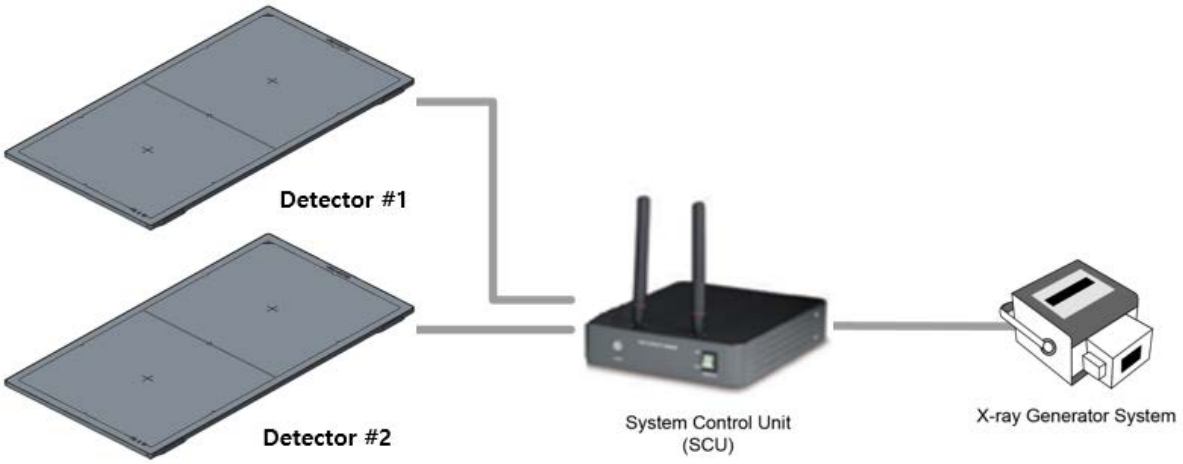
The detector and the X-ray generator should be connected by the generator interface cable to send or receive the synchronizing signal for X-ray exposure. Connect the one end of the generator interface cable to the **EXT_INT** port of SCU and the other end to the X-ray generator.
In DR Trigger interface, EXP_REQ and EXP_OK should be all connected between the SCU and the generator, whereas only EXP_REQ should be connected in Passive Trigger interface.

3.5.1 Trigger Interface Way

SCU Mini (FXRS-04A) can be wirelessly or wired connected to multiple detectors. If connecting multiple detectors to SCU Mini (FXRS-04A), the connection modes of generator interface cable vary by different Trigger interfaces.

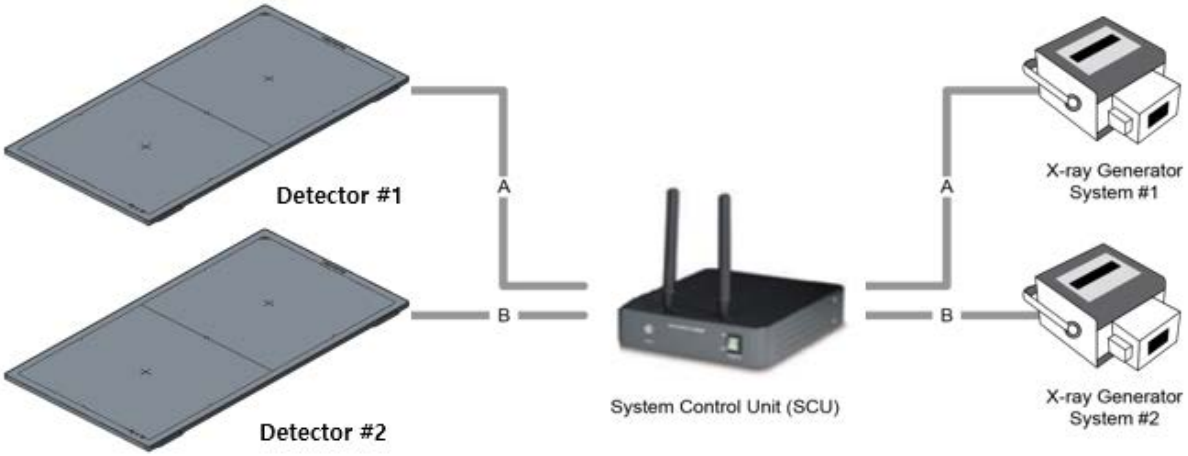
Trigger Interface	Description
Packet Trigger	Handles exposure signal by exchanging packet.
Line Trigger	Handles exposure signal by exchanging electrical signal.

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 transmits and receives signal with the one selected detector for taking images.
- Plusieurs détecteurs partagent un signal de générateur ensemble.
- Connectez un câble d'interface de générateur à l'un des groupes de broches.
- Le générateur émet et reçoit un signal avec le détecteur sélectionné pour prendre des images.

3.5.3 Line Trigger

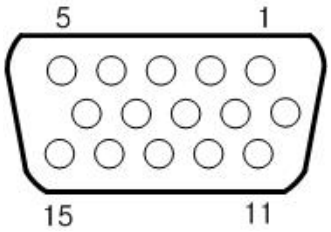


- Each detector shares a signal by being connected with generators separately.
- You can connect up to 2 generators.
- The connection of each detector and generator can be configured from **VIVIX Setup**.
- Chaque détecteur partage un signal en étant connecté à des générateurs séparément.
- Vous pouvez connecter jusqu'à 2 générateurs.
- La connexion de chaque détecteur et générateur peut être configurée à partir de 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 understands the generator device and interface technology should be in charge of interface work between SCU and the generator.
- Vous devez connaître un détecteur et un générateur de rayons X pour effectuer une exposition correcte. Sinon, les rayons X peuvent être exposés au détecteur à différents endroits.
- L'ingénieur qui comprend le dispositif du générateur et la technologie d'interface doit être en charge du travail d'interface entre le SCU et le générateur.

3.5.4 EXT_INF Port Pin Map

EXT_INF port is D-SUB 15 pin Female connectors of SCU mini (FXRS-04A) and used for the generator interface.

Product	EXT_INF port
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 pin for test only.

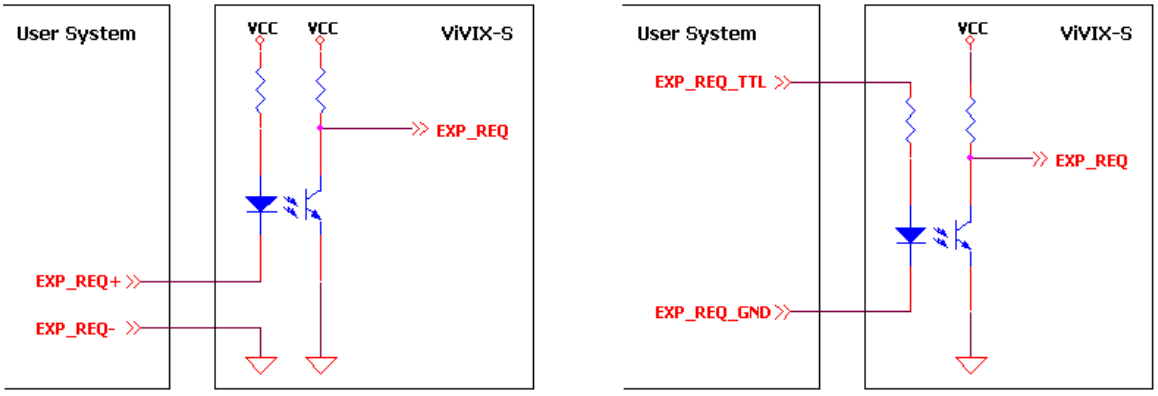
- There are **Contact** type (OPEN/ CLOSE) and **TTL** type (ON/ OFF) on the signal in/output pin.
- TTL type information
  - ON : VCC
  - OFF : GND
  - Current: 5 ㎃ ~ 10 ㎃
  - Voltage: 12 V ~ 24 V
- Il existe un type de contact (OUVERT/FERMÉ) et un type TTL (MARCHE/ARRÊT) sur la broche d'entrée/sortie du signal.
- Informations de type
  - TTL ON : VCC

	▫ OFF : MASSE ▫ Courant : 5 mA ~ 10 mA ▫ Tension : 12 V ~ 24 V

	• When you plan to add interface using a user-defined pin, contact to the person in charge of Vieworks. • Lorsque vous prévoyez d'ajouter une interface à l'aide d'un code PIN défini par l'utilisateur, contactez la personne en charge de Vieworks.

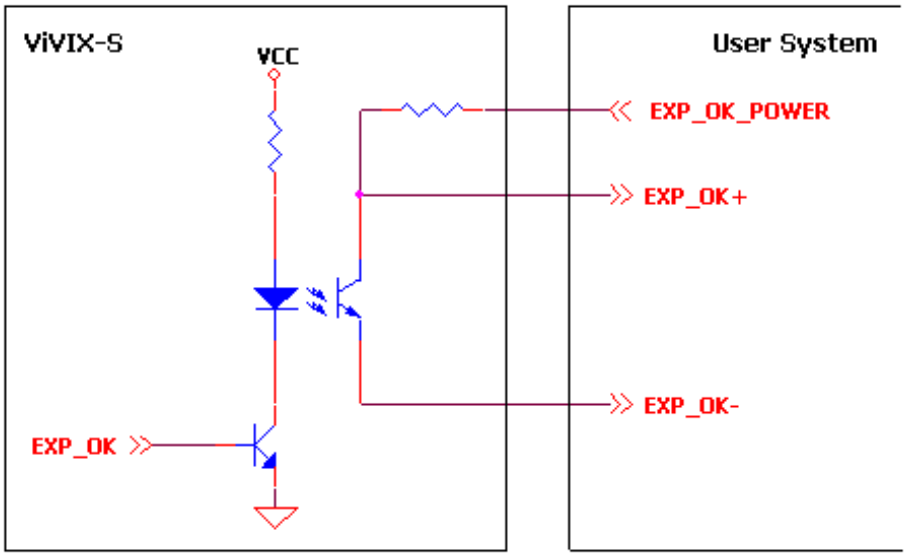
3.5.5 Input / Output Circuit

Exposure Request Input Circuit (EXP_REQ)



<Contact Type> <TTL Type>

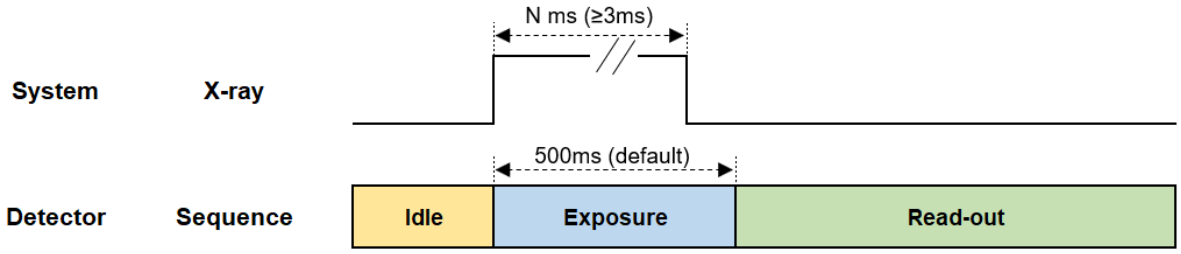
Exposure Respond Output Circuit (EXP_OK)



3.6 Exposure Mode

This mode is specialized to expose the general 2D Radiography.

3.6.1 AED (Auto Exposure Detection) Interface



Signal Processing Order

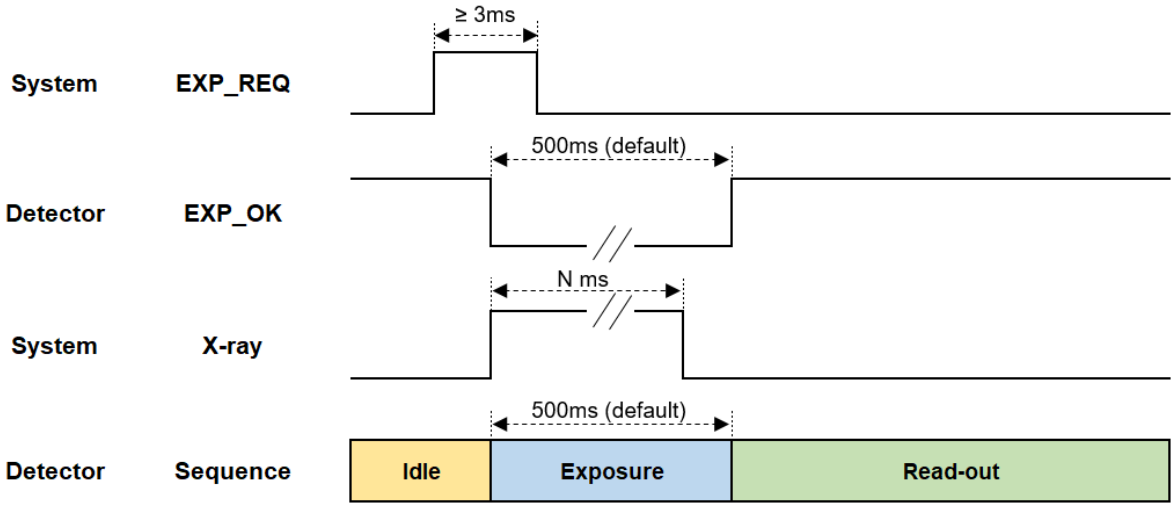
1 X-ray generator exposes X-ray.

2 Once the detector automatically detects the X-ray, it acquires images and sends the image data.

- The default X-ray exposure time set in the detector is 500ms and can be changed by the user's settings.
- Le temps d'exposition aux rayons X par défaut défini dans le détecteur est de 500 ms et peut être modifié par les paramètres de l'utilisateur.

- N ms, which is the time that the actual X-ray is to be exposed, should be shorter than the exposure time set in the detector. Otherwise, abnormal images may be obtained.
- N ms, which is the time that the actual X-ray is to be exposed, should be 3ms longer. Otherwise, the image may not be obtained.
- N ms, qui est le temps pendant lequel le rayon X réel doit être exposé, doit être plus court que le temps d'exposition réglé dans le détecteur. Sinon, des images anormales peuvent être obtenues.
- N ms, qui est le temps pendant lequel le rayon X réel doit être exposé, devrait être plus long de 3 ms. Sinon, l'image risque de ne pas être obtenue.

3.6.2 DR Trigger Interface



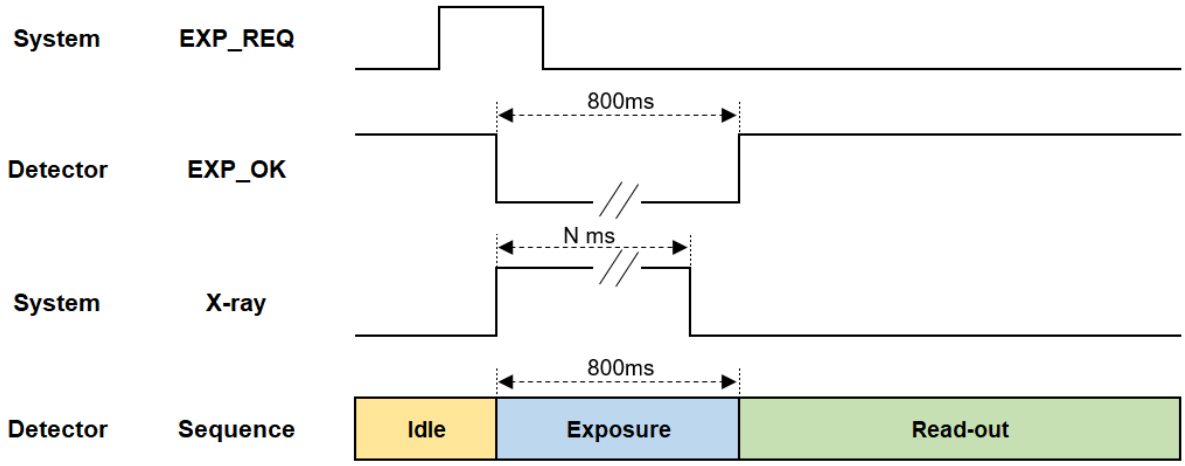
Signal Processing Order

1 Detector receives **EXP_REQ** signal from the generator.
2 Detector sends **EXP_OK** signal to the X-ray generator once it is ready for image acquisition.
3 X-ray generator exposes X-ray after checking the **EXP_OK** signal
4 Detector sends the image data after image acquisition.

- The default X-ray exposure time set in the detector is 500ms and can be changed by the user's settings.
- Le temps d'exposition aux rayons X par défaut défini dans le détecteur est de 500ms et peut être modifié par les paramètres de l'utilisateur.

- N ms, which is the time that the actual X-ray is to be exposed, should be shorter than the exposure time set in the detector. Otherwise, abnormal images may be obtained.
- **EXP_REQ** should be 3ms or longer. Or, image may not be acquired.
- N ms, qui est le temps pendant lequel le rayon X réel doit être exposé, doit être plus court que le temps d'exposition réglé dans le détecteur. Sinon, des images anormales peuvent être obtenues.
- EXP_REQ doit être de 3 ms ou plus. Ou, l'image peut ne pas être acquise.

3.6.3 SW Trigger Interface



Signal Processing Order

1 Detector receives EXP_REQ signal from the generator.
2 Detector sends EXP_OK signal to the X-ray generator once it is ready for image acquisition.
3 X-ray generator exposes X-ray after checking the EXP_OK signal
4 Detector sends the image data after image acquisition.

- The detector should configure the DR Trigger interface, and the X-ray exposure time should be set to 800ms or longer.
- Le détecteur doit configurer l'interface DR Trigger et le temps d'exposition aux rayons X doit être réglé sur 800 ms ou plus.

- N ms, which is the time that the actual X-ray is to be exposed, should be shorter than the exposure time set in the detector. Otherwise, abnormal images may be obtained.
- **EXP_REQ** is a signal in the form of communication sent from the workstation to the detector. Refer to **Packet Trigger** on **SDK Developer Manual** for more information on SW Trigger.
- N ms, qui est le temps pendant lequel le rayon X réel doit être exposé, doit être plus court que le temps d'exposition réglé dans le détecteur. Sinon, des images anormales peuvent être obtenues.
- EXP_REQ est un signal sous forme de communication envoyé du poste de travail au détecteur. Référez-vous à Packet Trigger on SDK Developer Manual pour plus d'informations sur SW Trigger.

4. Settings

This section gives information on installation, setting, and diagnosis to use a detector with SCU.

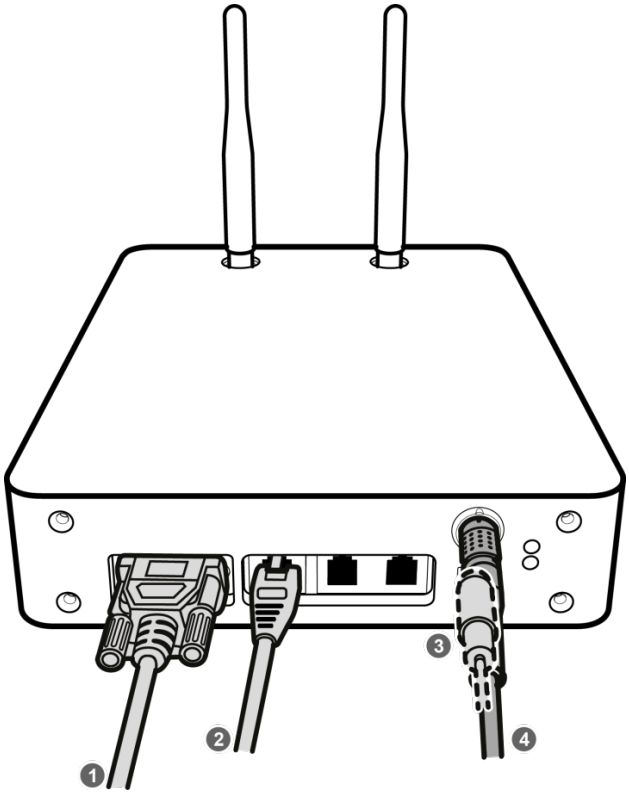
Product Installation

Device Setting

Diagnosis of Devices

4.1 Product Installation

- This equipment should be installed by a service personnel authorized by Vieworks.
- This equipment must only be connected to the power with protective earth.
- Cet équipement doit être installé par un personnel de service autorisé par Vieworks.
- Cet équipement doit uniquement être connecté à l'alimentation avec mise à la terre de protection.



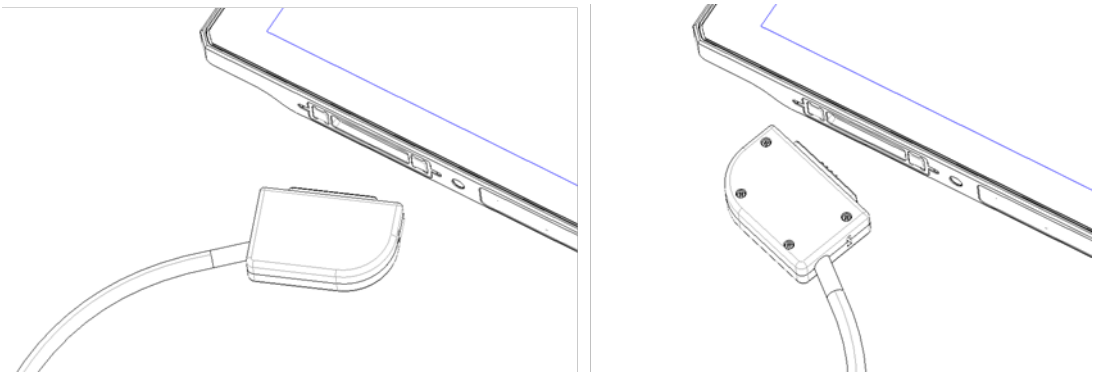
1 If you use the **DR Trigger** interface, connect the one end of generator interface cable to the **EXT_INF** port of SCU, and the other to the X-ray generator.

- If you use the AED interface, a generator interface cable is not needed as the detector operates by detecting X-ray automatically.
- Si vous utilisez l'interface AED, un câble d'interface de générateur n'est pas nécessaire car le détecteur fonctionne en détectant automatiquement les rayons X.

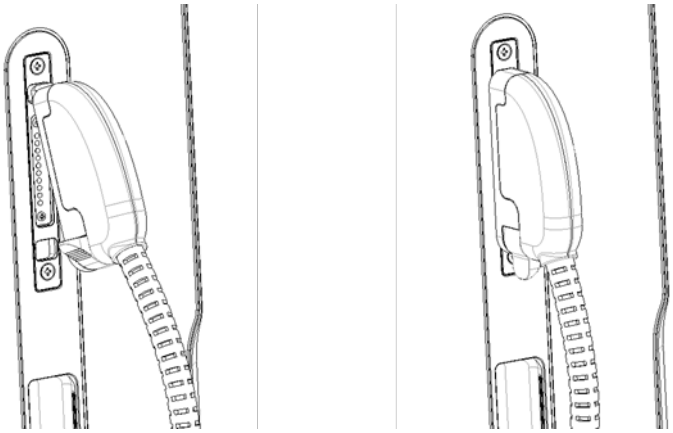
2 Connect one end of the LAN cable to one of the LAN ports of SCU mini, and the other to the LAN Card Connector of workstation assigned for data transfer. Stand the antenna of SCU mini upright.

3 When in a wired state, use the tether interface cable to link the detector to the SCU mini port.

Connection to the tether interface on the side



Connection to the tether interface on the rear

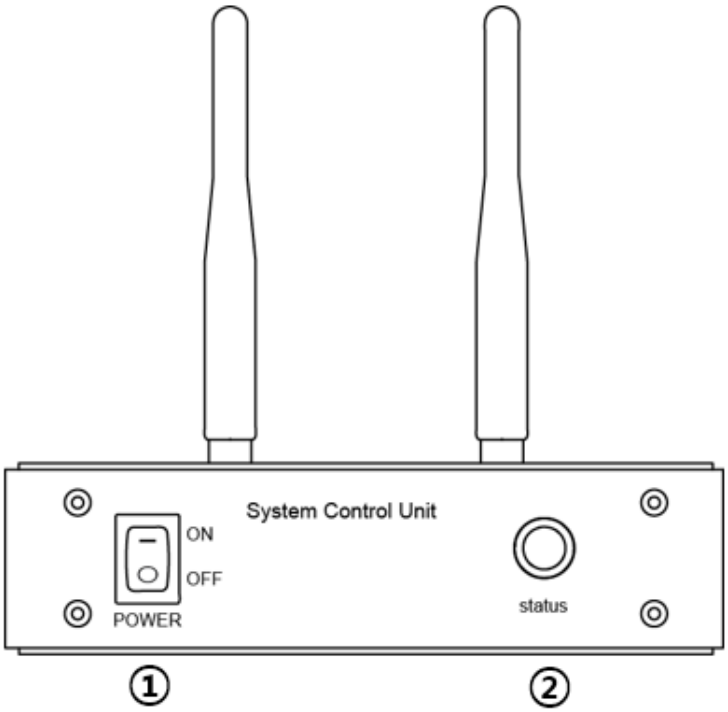


- The tether interface cable is not needed if image is wirelessly transmitted.
- There are 2 tethered interfaces on the side and the rear of the detector, and only one of them are open.
- The detector with the open tethered interface on the side can be wired via VW tether cable.
  - The VW tether interface cable is fixed by the magnet attached to the detector.
  - When connecting the VW tether interface cable to the detector, Connection to both directions work fine.
- The detector with the open tethered interface on the rear can be wired via N tether cable.
  - The N tether interface cable is fixed by the magnet attached to the detector.
  - The N tether interface cable should be connected to the certain direction.
- Le câble d'interface d'attache n'est pas nécessaire si l'image est transmise sans fil.
- Il y a 2 interfaces attachées sur le côté et à l'arrière du détecteur, et une seule d'entre elles est ouverte.
- Le détecteur avec l'interface attachée ouverte sur le côté peut être câblé via un câble d'attache VW.
  - Le câble d'interface attaché VW est fixé par l'aimant fixé au détecteur.
  - Lors de la connexion du câble d'interface attaché VW au détecteur, la connexion dans les deux sens fonctionne correctement.

	• Le détecteur avec l'interface captive ouverte à l'arrière peut être câblé via un câble captif N. ▫ Le câble d'interface captif N est fixé par l'aimant fixé au détecteur. ▫ Le câble d'interface connecté N doit être connecté dans une certaine direction.

4 Connect AC-DC adaptor to the power input port of SCU mini to supply power.

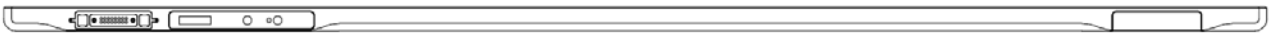
4.1.1 Connecting SCU mini (FXRS-04A)



1 Turn on the switch in front of the SCU mini (ON).
2 Check if Status LED is turned in green.

	• Status LED blinking in green means that SCU is booting after power is supplied. • Status LED in green means that SCU booting is complete. • Le voyant d'état clignotant en vert signifie que le SCU démarre après la mise sous tension. • La LED d'état en vert signifie que le démarrage du SCU est terminé.

4.1.2 Booting up the Detector



1 Press the power button on the detector for about a second. But Power Control in Settings is set to By SCU, the power is automatically turned on when wired.
2 Check that the detector's power LED is lit green.
3 Check the battery status (remaining, charged) and communication connection status (wired / wireless, detector AP / STATION, wireless connection strength, etc.) on the detector's OLED display.

- If the power LED flashes green, power is applied, and the detector is booting up.
- When the power indicator LED is lit green, the detector has finished booting.
- If you press and hold the power button for about 3 seconds, the power indicator LED and the OLED display turn off, then the system is powered off. However, the battery pack can be charged when the SCU is powered via a tether interface cable is attached.
- If Power control is set to By SCU and the detector is wired to SCU, the detector is automatically powered off without having to press the power button.
- For more information on Power Control setting, refer to **VIVIX Setup Operation Manual**.
- Si le voyant d'alimentation clignote en vert, l'alimentation est appliquée et le détecteur démarre.
- Lorsque le voyant d'alimentation est allumé en vert, le détecteur a terminé de démarrer.
- Si vous maintenez enfoncé le bouton d'alimentation pendant environ 3 secondes, le voyant d'alimentation et l'écran OLED s'éteignent, puis le système est mis hors tension.
- Cependant, la batterie peut être chargée lorsque le SCU est alimenté via un câble d'interface d'attache.
- Si le contrôle de l'alimentation est réglé sur Par SCU et que le détecteur est câblé à un adaptateur SCU, le détecteur est automatiquement mis hors tension sans avoir à appuyer sur le bouton d'alimentation.
- Pour plus d'informations sur le réglage du contrôle de l'alimentation, reportez-vous au manuel d'utilisation de la configuration VIVIX.

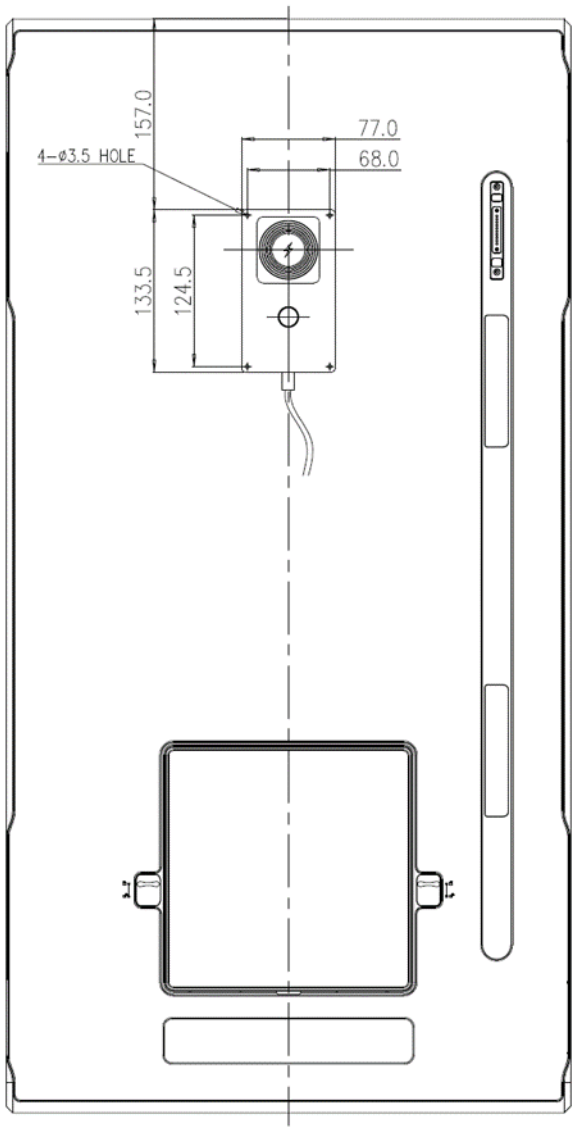
4.1.3 Installing Wireless Power Transmitter (FXRC-05A)

How to install the FXRC-05A in the detector

- Alignment between equipment:
  Wireless power transmission antennas in the wireless power transmitter and in the detector should bring into a line. Also, the infrared LED of the detector should be aligned with the infrared optic acquisition of the wireless power transmitter. The range of misalignment between 2 equipment should be up to 5mm.
- Separation distance between equipment:
  Wireless power transmitter and the detector should be positioned close together but should not be in contact with each other. The separation distance between these two equipment should be between 1mm and 3mm.
- Equipment materials:
  Wireless power transmitter uses magnetic induction and infrared interface. Therefore, it should have the material that magnetic field and infrared rays can pass through. Excluding the fixing hole, it is recommended to form layer of air or use plastic, which infrared ray can well pass through, as a material.

- If there is misalignment between equipment, the wireless power transmitter becomes less efficient, and heat increases. If misalignment between two equipment goes beyond permissible range (≤5mm), the successful power transmission is not guaranteed.

- The further the separation distance between equipment, the less efficient the wireless power transmission and the greater the heat. If the separation distance is farther than the permissible range (≤3mm), successful power transmission is not guaranteed.
- If two equipment are in contact with each other, the exterior of the wireless power transmitter may be damaged due to the friction with the detector. Make sure these two equipment are not in contact.
- If the infrared interface between two equipment does not work well, the detector cannot control the wireless power transmitter. Abnormal operation of wireless power transmitter may result in unsuccessful image acquisition.
- S'il y a un mauvais alignement entre les équipements, l'émetteur de puissance sans fil devient moins efficace et la chaleur augmente. Si le désalignement entre deux équipements dépasse la plage autorisée (≤5 mm), la transmission de puissance réussie n'est pas garantie.
- Plus la distance de séparation entre les équipements est grande, moins la transmission de puissance sans fil est efficace et plus la chaleur est élevée. Si la distance de séparation est supérieure à la plage autorisée (≤3 mm), une transmission de puissance réussie n'est pas garantie.
- Si deux équipements sont en contact l'un avec l'autre, l'extérieur de l'émetteur de puissance sans fil peut être endommagé en raison du frottement avec le détecteur. Assurez-vous que ces deux équipements ne sont pas en contact. Si l'interface infrarouge entre deux équipements ne fonctionne pas correctement, le détecteur ne peut pas contrôler l'émetteur de puissance sans fil.
- Un fonctionnement anormal de l'émetteur de puissance sans fil peut entraîner une acquisition d'image infructueuse.



<Arrangement between FXRD-4386WB and FXRC-05A>

4.2 Device Setting

4.2.1 Software Installation

1 After connecting all devices, prepare the following software to set, calibrate and operate the detector with PSU or 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.
- Il n'est pas nécessaire d'installer le pilote de périphérique VIVIX et le programme d'installation VIVIX séparément en cas d'installation du programme VXvue créé par Vieworks.

3 Configure environment for the workstation.

- Refer to **VIVIX Setup Operation Manual** for the software installation and service environment setting for workstation.
- Reportez-vous au manuel d'utilisation de la configuration VIVIX pour l'installation du logiciel et les paramètres d'environnement de service pour le poste de travail.

4.2.2 Setting Detector and PSU / 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.

- Device configuration should be handled by an engineer who understands how to use **VIVIX Setup**, Windows system, wired network and related technologies. Failure to do so may result in errors in the operation of the detector or may affect the image quality.
- La configuration de l'appareil doit être gérée par un ingénieur qui comprend comment utiliser la configuration VIVIX, le système Windows, le réseau câblé et les technologies associées. Ne pas le faire peut entraîner des erreurs dans le fonctionnement du détecteur ou peut affecter la qualité de l'image.

4.3 Diagnosis of Devices

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

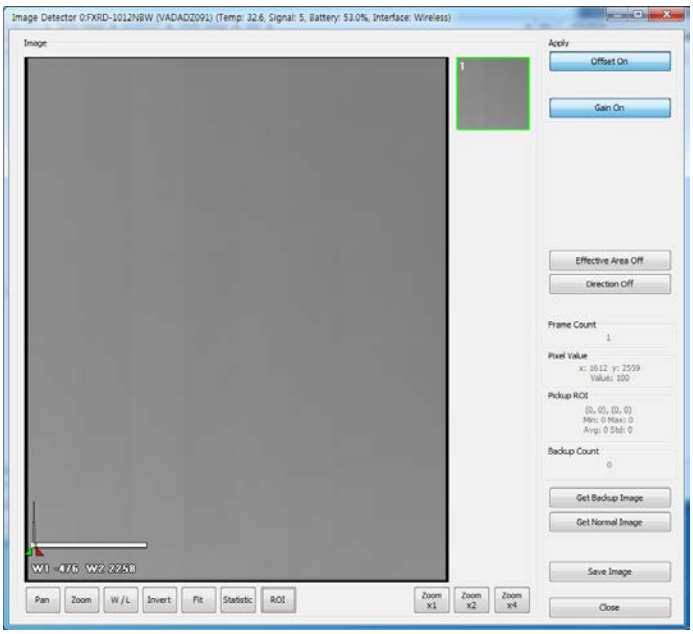
Diagnosis Items

Items	Description
Image	Diagnoses the acquired images.
Battery Pack	Diagnoses the condition of a battery pack.
Wired/Wireless Communication Status	Diagnoses the status of wired/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.
- Réglez les appareils et effectuez à nouveau l'étalonnage si un problème est détecté lors du diagnostic. Contactez la personne responsable du service si le problème n'est pas corrigé.

4.3.1 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. • Reportez-vous au manuel d'utilisation de la configuration VIVIX pour obtenir des informations détaillées sur le diagnostic d'image.

	• 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. • Si un problème est détecté sur l'image, vérifiez s'il est causé par l'environnement et calibrez à nouveau le détecteur. Contactez le responsable de Vieworks si le problème est causé par les performances d'un détecteur.

4.3.2 Diagosing Battery Pack

Check from OLED display of the detector

Check the mounting status / charging status of a battery, and battery levels on the OLED display.

Icon	Description
	No battery pack, Battery capacity is less than 5%
	Charging (Battery capacity changes depending on remaining charge.)
	Charging complete or discharged. (Battery capacity changes depending on remaining charge.)

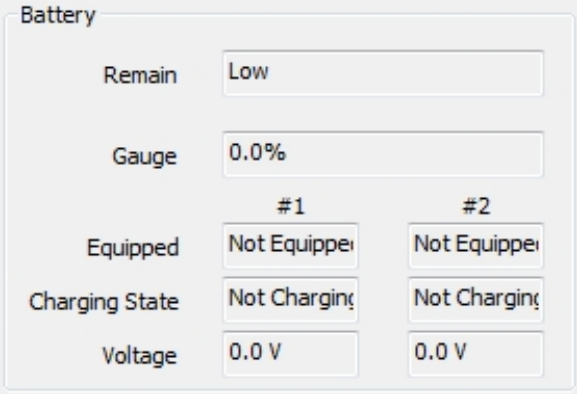
Check the charge status of detector with charge status LED

LED Status	Description
Off	No charging power
Lights up orange	Charging
Lights up green	Charging completed

Check from VIVIX Setup

1 Execute **VIVIX Setup** and go to the **Maintenance** tab of the **Detector Maintenance** dialog.

2 Check the mounting status, charging status and remains of a battery**.**



- You can also check the battery remains from **VXvue** or **VIVIX SDK**.
- Refer to **VIVIX Setup Operation Manual** for the information about the battery diagnosis.
- Vous pouvez également vérifier la batterie restante à partir de VXvue ou VIVIX SDK.
- Reportez-vous au manuel d'utilisation de la configuration VIVIX pour plus d'informations sur le diagnostic de la batterie.

- 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 service personnel in Vieworks.
- Étant donné qu'une batterie est un consommable dont les performances diminueront avec le temps, assurez-vous de vérifier sa durée de vie lorsque vous l'utilisez. En cas de problème avec une batterie, consultez le personnel de maintenance de Vieworks.

- If the battery remains under 5%, the system warns low battery and the detector will be turned off automatically after the battery is consumed for a specific period of time. Therefore, it is recommended to change the battery when a warning message or an indicator displays.
- Si la batterie reste inférieure à 5%, le système avertit la batterie faible et le détecteur s'éteindra automatiquement après que la batterie soit consommée pendant une période de temps spécifique. Par conséquent, il est recommandé de changer la batterie lorsqu'un message d'avertissement ou un indicateur s'affiche.

4.3.3 Diagnosing Communication Status

Checking on the OLED display of the detector

1 Check the detector communication status on the initial screen of OLED display.

Classification	Item	Icon	Description
Battery	With or without a battery		No battery packs. Battery capacity is less than 5%.
	Whether the battery is charged		Charging (Battery capacity changes depending on remaining charge.)
	Battery level		Charging complete or discharged. (Battery capacity changes depending on remaining charge.)
Communication	AP (Wireless)		Operates in AP Mode
	STATION (Wireless)		Preset identifier (default is 'Sy' if not using preset switching function)
			Level 5 (Link Quality: 66~70, Very Good)
			Level 4 (Link Quality: 56~65, Good)
			Level 3 (Link Quality: 41~55, Normal)
			Level 2 (Link Quality: 31~40, Bad)
			Level 1 (Link Quality: 1~30, Very Bad)
			Level 0 (Link Quality: 0, Unknown)
	Tether Interface (Wired)		Operates in tether interface mode (connected at 1Gbps)
			Operates in tether interface mode (connected below 100Mbps)
System Power	Sleep Mode		Enters sleep mode

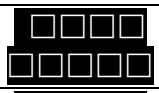
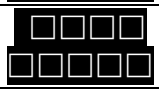
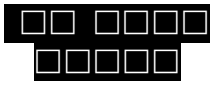
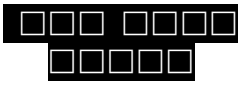
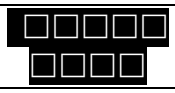
2 On the initial display of the OLED display, pressing the power button or AP button for about 1 second will switch the OLED display to the second screen. On the second screen, check the IP address of the detector.

Classification	Item	Display	Description
Communication	IP address	000.000.000.000	Detector IP address

3 If you press the power button or AP button on the second screen of the OLED display for about 1 second, the OLED display will switch to the third screen. On the third screen, check the SSID information of the detector that is important for wireless connection.

Classification	Item	Display	Description
Communication	**SSID**		Displays SSID of the detector's current state (AP or STATION)

4 During certain operations, the OLED display shows the operating status as follows:

Classification	Display	Description
Operating Status		Detector booting up
		Deactivating the detector sleep mode
		Acquiring images
		Saving images in the detector
		Sending images
		Switching to detector AP mode (AP button function: Detector AP/STA)
		Switching to detector station mode (AP button function: Detector AP/STA)
		Initializing wireless setting information
		Syncing wireless information with connected SCU
		Scanning for nearby AP (AP button function: Preset switching)
		Changing external AP (AP button function: Preset switching)

5 If a detector error is detected, an error number is displayed on the OLED initial screen. Pressing the power button or AP button for about 1 second while the error screen is displayed will switch to the screen showing the battery and communication status.

Classification	Display	Description
Error Status		Cause: FPGA error Expected malfunction: Failed image acquisition or acquired abnormal image
		Cause: ROIC error Expected malfunction: Failed image acquisition or acquired abnormal image
		Cause: Gate IC error Expected malfunction: Image acquisition failure or acquired abnormal image

[redacted]	Cause: AED sensor error Expected malfunction: Image acquisition failed in AED mode
[redacted]	Cause: Internal power failure Expected malfunction: Unintentional power off, failed image acquisition
[redacted]	Cause: Battery count error Expected malfunction: Battery capacity indication error

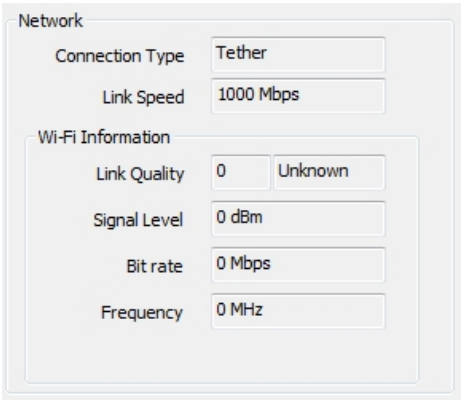
Check communication status in VIVIX Setup

Wired Communication

1 Connect the detector with a cable.

2 Execute **VIVIX Setup** and go to the **Maintenance** tab of the **Detector Maintenance** dialog.

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

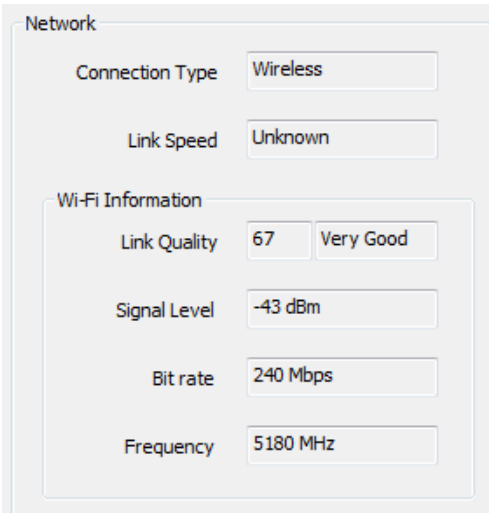


Wireless Communication

1 Connect the detector wirelessly.

2 Execute **VIVIX Setup** and go to the **Maintenance** tab of the **Detector Maintenance** dialog.

3 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.
- Vous pouvez également vérifier l'état de la communication depuis VXvue ou VIVIX SDK.
- Reportez-vous au manuel d'utilisation de la configuration VIVIX pour obtenir des informations détaillées sur le diagnostic de la communication sans fil.

- 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.
- La communication ne peut pas fonctionner correctement lorsque la force de la communication sans fil est inférieure au niveau 2. Par conséquent, il est nécessaire de vérifier l'état de la communication sans fil environnante.

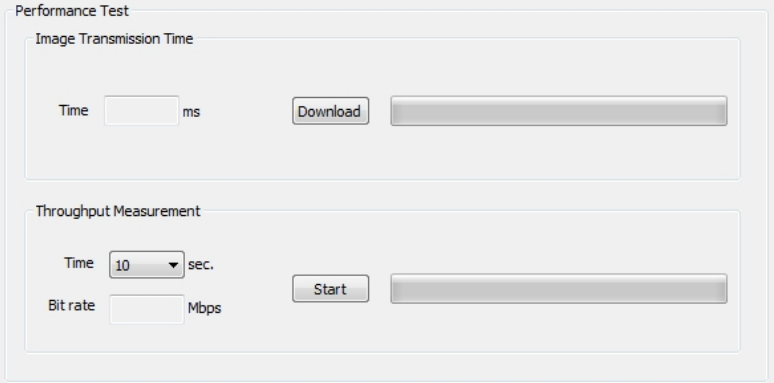
- In case of using the detector under wireless communication, be sure to check the communication status before starting to use the detector. If the status is bad, the speed of acquiring images will be very slow or you may fail to acquire images.
- Be sure to check the surrounding wireless communication to prevent communication interference. If wireless communication module in the detector has any problems, contact the service engineer in Vieworks.
- En cas d'utilisation du détecteur en communication sans fil, assurez-vous de vérifier l'état de la communication avant de commencer à utiliser le détecteur. Si l'état est mauvais, la vitesse d'acquisition des images sera très lente ou vous risquez de ne pas acquérir d'images.
- Assurez-vous de vérifier la communication sans fil environnante pour éviter les interférences de communication. Si le module de communication sans fil du détecteur rencontre des problèmes, contactez le technicien de maintenance de Vieworks.

4.3.4 Diagnosing Communication Speed

1 Execute **VIVIX Setup** and go to the **Maintenance** tab of the **Detector Maintenance** dialog.

2 Click on the **Download** button in **Image Transmission Time** and check image transmission speed of the detector.

3 Click on the **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.
- Reportez-vous au manuel d'utilisation de la configuration VIVIX pour obtenir des informations détaillées sur le diagnostic de la vitesse de communication.

- 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.
- Assurez-vous de vérifier l'environnement de communication si un problème survient dans la vitesse de communication. Contacter le responsable du service si le problème est lié au module de communication d'un détecteur et du SCU.

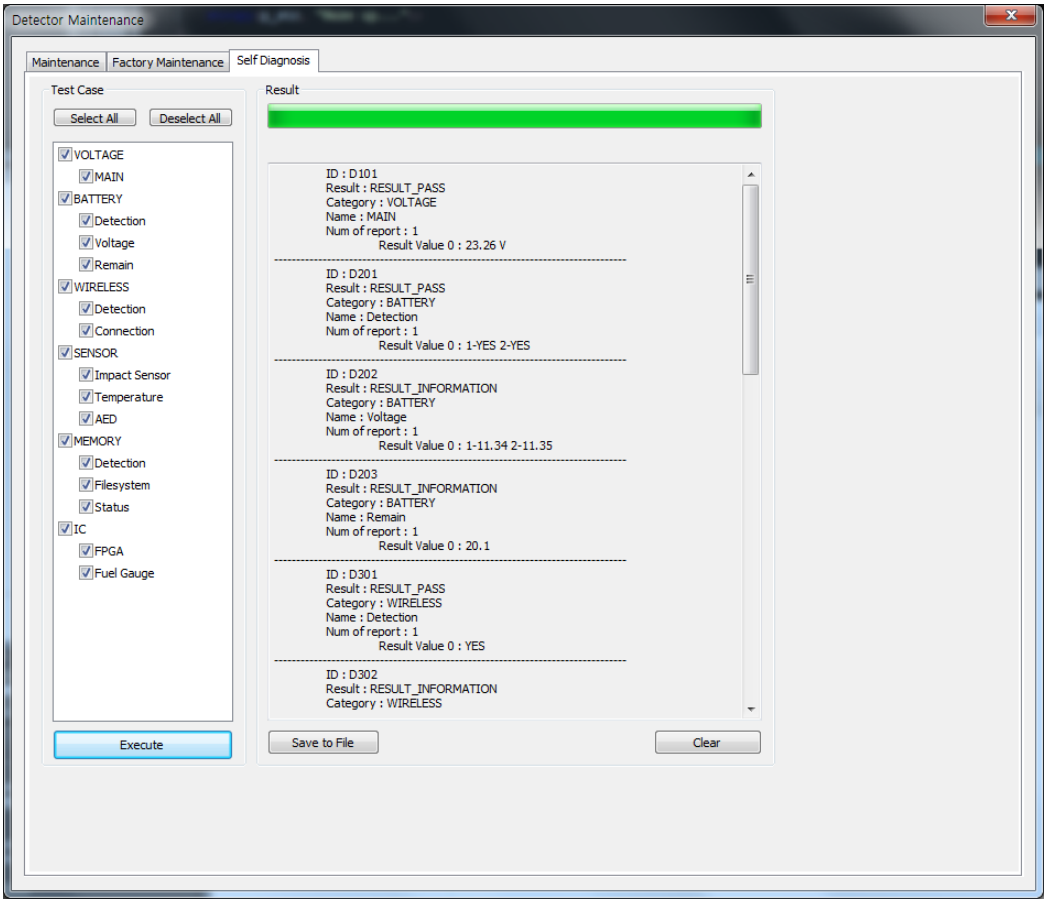
4.3.5 Self-Diagnosis

1 Execute **VIVIX Setup** and go to the **Self Diagnosis** tab in the **Detector Maintenance** dialog.

2 Check the desired items to diagnose from the **Test Case** list.

3 Click on the **Execute** button to perform self-diagnosis.

4 Check the status and result of diagnosis for each item in the **Result** dialog.



- Click the **Save to File** button to save the result of a diagnosis as a file and contact the service engineer if any problem is found.
- Cliquez sur le bouton Enregistrer dans un fichier pour enregistrer le résultat d'un diagnostic sous forme de fichier et contactez le technicien de maintenance si un problème est détecté.

Self-diagnosis items of detector and measures

Voltage

Item	Form	Expected problem	Measures
MAIN	Decision	Problem with input power	Replace the battery pack.
			Replace the tether interface cable.
			Replace the wireless power transmitter
		Problem with system power	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 circuit is connected to a battery pack.	Contact a service engineer.

Wired

Item	Form	Expected problem	Measures
Detection	Decision	Defective ethernet PHY	Contact a service engineer.
Connection	Decision	The cable is connected incorrectly.	Reconnect the tether interface cable.
		Defective cable	Replace the tether interface cable.
		Defective ethernet PHY	Contact a service engineer.

Wireless

Item	Form	Expected problem	Measures
Detection	Decision	Defective wireless module	Contact a service engineer.
Connection	Decision	Inconsistent environment of the wireless communication.	Check wireless communication environment.
		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

Wired

항목	Form	Expected problem	Measures
Detection	Decision	Defective ethernet PHY	Contact a service engineer.

Wireless

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

Memory

Item	Form	Expected problem	Measures
Detection	Decision	Impossible to save logs.	Contact a service engineer.
File system	Decision	Impossible to save logs.	Contact a service engineer.
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 engineer.
Current Controller	Decision	Impossible to block overcurrent when using the wired mode.	Contact a service engineer.

5. Maintenance

This section gives information about maintenance of the product.

Product Initialization

Detector Power Save Function

5.1 Product Initialization

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

5.1.1 SCU Initialization

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

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
	Frequency	5GHz
	Country	KR
	Band	40MHz
	Channel	+36
	SSID	vivix
	Key	1234567890
Trigger		
	Method	Packet
	Polarity	Auto

5.1.2 Detector Initialization

1 Click the **Maintenance** button after executing the **VIVIX Setup** program.

2 Go to **Detector Maintenance** window **>** **Maintenance** tab and click the **Factory Reset** button.

3 Wait for the detector until it is rebooted automatically.

4 Click the **Configuration** button and check if detector initialization is complete.

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
Wireless Network	
SSID	vivix
Key	1234567890
AP Button	AP switching
Wireless Only	OFF
Power Mode	
Sleep	OFF
Shut down	OFF
Power Control	By Detector
AP	
Enable	OFF
Frequency	5GHz
Country	KR
Band	80MHz
Channel	36
SSID	vivix_ap
Key	1234567890
Image Acquisition	
Exposure Mode	AED
Image Transmission	
Timeout	20sec
Option	None

5.1.3 Wireless Initialization of Detector

1 Connect the detector wirelessly without connecting the tether interface cable.
2 Press and hold both the power button and AP button over 3 seconds.
3 Initialization will be conducted when the green LED is flickering. After that, the detector will reboot automatically.
4 When booting is complete, make sure the detector is initialized.

Default value of wireless initialization

Item		Default Value
Network		
	IP Address	169.254.1.10
	Subnet Mask	255.255.0.0
	Gateway	169.254.2.100
Wireless Network		
	SSID	vivix
	Key	1234567890
	AP Button	AP switching
	Wireless Only	OFF
AP		
	Enable	OFF
	Frequency	5GHz
	Country	KR
	Band	80MHz
	Channel	36
	SSID	vivix_ap
	Key	1234567890

- When you process wireless initialization of a detector, only the detector's network information is reset to the default value.
- Lorsque vous procédez à l'initialisation sans fil d'un détecteur, seules les informations réseau du détecteur sont réinitialisées à la valeur par défaut.

5.2 Detector Power Save Function

You can extend the battery life by using the power saving function of the detector.

- This function works only when the battery is supplied power to the system. In other words, the power saving function does not work when the power is supplied from the SCU through the tether interface cable.
- Cette fonction ne fonctionne que lorsque la batterie est alimentée par le système. En d'autres termes, la fonction d'économie d'énergie ne fonctionne pas lorsque l'alimentation est fournie par le SCU via le câble d'interface.

Types of Power Save Mode

Item	Description
Normal	The detector can be operated and can 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 of the detector or not. • If the detector is not used for the set time, it switches to Sleep mode if the Sleep function is set. (**Off / After 10min / After 15min / After 20min / After 25min / After 30min**)
Shut Down	Sets whether you use the shut down function of the detector or not. • If the detector is not used during the set time, the detector is turned off. (**Off / After 30min / After 60min / After 90min / After 120min**)

- Refer to **VIVIX Setup Operation Manual** for the detailed information about the power save mode.
- Reportez-vous au manuel d'utilisation de la configuration VIVIX pour des informations détaillées sur le mode d'économie d'énergie.

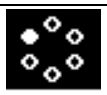
Entry Condition of Power Save Mode

Item	Description
Normal	-
Sleep	The detector turns to sleep mode if not used for the setting time.
Shut Down	The detector is turned off if not used for the setting time under the sleep mode. If the Sleep function is not used, the detector will shut down if it is not used for a set time.

Checking Indication in Power Save Mode

Item	Description
Normal	The power indicator LED is on and the OLED display shows the initial screen.
Sleep	• The power indicator LED is on and the OLED display shows a sleep mode icon. • You can check the sleep status in **VIVIX Setup** or **VXvue**. • **VIVIX SDK** notices **Sleep** state.
Shut Down	Power indicator LED and OLED display are off.

Shows Sleep Mode on OLED Display

Item	Icon	Description
Sleep		Enters sleep mode
Changing Settings		Cancels sleep mode

Disabling Power Save Function

Item	Description
Normal	-
Sleep	1 You can turn off the sleep state in VIVIX Setup or VXvue. 2 You can call the function for turning off the sleep state from VIVIX SDK. 3 You can cancel the sleep state by pressing the detector power button or the AP button.
Shut Down	Reboot the detector by pressing a power button on the detector.

- When using the Sleep function, make sure the detector is in Sleep mode before shooting. No image is acquired in sleep mode.
- Wake-up time is needed when the detector wakes up from the Sleep mode. Do not expose X-rays during wake-up. If X-rays are exposed during wake-up, abnormal images may be obtained.
- Lorsque vous utilisez la fonction Veille, assurez-vous que le détecteur est en mode Veille avant la prise de vue.
- Aucune image n'est acquise en mode veille. Lorsque le détecteur sort du mode veille, il faut environ 5 secondes pour se réveiller.N'exposez pas les rayons X au réveil. Si des rayons X sont exposés pendant le réveil, des images anormales peuvent être obtenues.

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 service engineer who is authorized by Vieworks. If an unqualified person performs troubleshooting on the system resulting in damaging the detector, software, or hardware, then the Vieworks or its representative is not responsible for the detector repair regardless of remain warranty. For more detailed information, refer to <7.1 Service Information> and <7.2 Warranty>.
- Le dépannage doit être effectué par un ingénieur de service autorisé par Vieworks. Si une personne non qualifiée effectue un dépannage sur le système entraînant un endommagement du détecteur, du logiciel ou du matériel, alors Vieworks ou son représentant n'est pas responsable de la réparation du détecteur, quelle que soit la garantie. Pour plus d'informations, reportez-vous aux sections <7.1 Service Information> et <7.2 Garantie>.

6.1.2 Fail to Turn the Detector On

Category	Description
Symptom	• Failed to turn the power of the detector.
Expected Causes	• The battery pack is discharged. • The battery pack is attached wrongly. • The battery pack is broken. • The detector is broken.
Solutions	1 Charge a battery pack 2 Attach a battery pack again. 3 Replace with another battery pack. 4 Replace with another detector.

6.1.3 The Power Switch of SCU or Status LED is not worked normally

Category	Description
Symptom	• The power switch of SCU is not working. • The status LED of SCU is not responding.
Expected Causes	• Problems with the connection of power cable. • Power cable is broken. • AC-DC adapter is broken. • LAN cable is broken. • SCU is broken.

Solutions	1 Check the cable connections (AC-DC adapter, power cable, LAN cable) of the SCU. 2 Turn on and off SCU. 3 Replace the power cable. 4 Replace the AC-DC adapter. 5 Replace the LAN cable. 6 Replace SCU.

6.1.4 Communication Test is failed

Category	Description
Symptom	• The communication connection fails or is lost. • A transmission error occurs, and abnormal images or data are sent.
Expected Causes	• Network connection problem • Network setting problem • PC environment setting problem • Wireless environment problem • SCU (or external AP) failure • Detector failure
Solutions	1 Check the connection of network cable between workstation and SCU (or external AP). 2 Check if the accurate network cable is used or not. (CAT 5E or 6) 3 Set the network information of workstation, SCU (or external AP) and detector again. 4 Set the workstation environment again such as firewall setting. 5 Check surrounding wireless communication environment. If there is an environment that prevents wireless communication, remove the obstacle or change the wireless communication settings to prevent the interference. 6 Reboot the detector and SCU (or external AP).. 7 Replace SCU (or external AP). 8 Replace the detector.

6.1.5 Communication is connected, but no image is acquired

Category	Description
Symptom	• The image cannot be sent to PC even though the X-ray is exposed.
Expected Causes	• Problems with the generator interface • Problems with the generator interface connection • Generator interface cable failure • SCU failure • Detector failure
Solutions	1 Check the generator interface setting of the detector. (AED mode, DR Trigger mode)

	2 In DR trigger mode, check the generator interface connection. 3 Replace the generator interface cable. 4 Replace the SCU. 5 Replace the detector.

6.1.6 Getting Abnormal Images

Category	Description
Symptom	• The image sent to the PC is abnormal.
Expected Causes	• Problems with calibration data • Problems with setting exposure time • Wrong operating environment • Detector failure.
Solutions	1 Perform the calibration again. 2 Make sure that the detector is set to be applied calibration data. 3 Set the exposure time to be longer than the X-ray exposure time. 4 Check the operating environment (temperature, humidity, X-ray energy range). 5 Replace the detector.

6.1.7 When Hours of Battery Use Decreases

Category	Description
Symptom	• The fully charged battery pack runs down quickly.
Expected Causes	• Reduced performance (capacity) with prolonged use of the battery pack • Using the battery pack in low or high temperature environments
Solutions	1 If the battery pack is to be used for a long time, replace it with a new battery pack. (The battery pack is a consumable.) 2 Use the battery pack at room temperature. In cold or hot environments, the battery pack's capacity decreases.

6.1.8 When an Error Number is Displayed on the OLED Display

Category	Description
Symptom	• The error number is displayed on the OLED display.
Expected Causes	• ERR_00 ~ ERR_04: Detector internal IC failure • ERR_05: Battery pack failure or insufficient battery pack
Solutions	1 ERR_00 ~ ERR_04: Replace the detector. 2 ERR_05: Check the number and status of batteries installed. If normal, replace with a new battery pack.

7. Information

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

Service Information

Warranty

Revision History

7.1 Service Information

7.1.1 Product Liftime

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

7.1.2 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, adjust, 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.

7.1.3 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: **FXRD-4386WB** Detector
- Serial number: 9 digit-number on the product label
- Explanation of problem: Describe it as detailed as possible.

7.1.4 Replacement 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.

7.1.5 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-04A**

7.2 Warranty

Vieworks Co., Ltd. follows the contract with each customer regarding the product warranty period. 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.

European Union

This product can be used in which EU members, in accordance with Article 10(10) /
or this product can be used in at least one EU country, in accordance with Article 10(2).

FCC Instrunctions

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

FCC Interference Statement_Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC Caution

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. This transmitter must not be co-located or operating in conjunction with any other antenna ortransmitter.
SDoC form will be attached to the manual when placing to the market.

Industry Canada Statement

This device complies with RSS-247/RSS-210 of the Industry Canada Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
Ce dispositif est conforme à la norme CNR-247/CNR-210 d'Industrie Canada applicable aux appareils radio exempts de licence. Son fonctionnement est sujet aux deux conditions suivantes: (1) le dispositif ne doit pas produire de brouillage préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

Technical requirements for Wi-Fi operation in the 5 GHz band

Wi-Fi access points that are capable of allowing your device to operate in the 5.15 - 5.25 GHz band are optimized for indoor use only. If your Wi-Fi network is capable of operating in this mode, please restrict your Wi-Fi use to indoors to not violate Canada ISED regulations to protect mobile satellite services.

Exigences techniques pour l'exploitation du Wifi dans la bande 5 GHz

Les points d'accès Wifi permettant à votre appareil de fonctionner dans la bande
5,15 - 5,25 GHz sont optimisés pour une utilisation à l'intérieur seulement. Si votre réseau Wifi peut fonctionner dans ce mode, veuillez limiter l'utilisation de votre Wifi à l'intérieur pour ne pas enfreindre les Canada ISED Réglementation sur la protection des services mobiles par satellite.

7.3 Revision History

Version	Date	Description
1.0	2021-08-03	• Initial release

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