VIVIX-S VW Service Manual

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Contents

1. Instruction 6

1.1 Document Guide 7

1.1.1 Caution 7

1.1.2 Target Audience 7

1.1.3 Symbols 7

1.1.4 Notations 7

1.1.5 Contact Us 7

1.2 Intended Use 8

1.2.1 Features 8

1.3 Product Use 9

1.3.1 Product Usage 9

1.3.2 Disclaimer 9

1.3.3 Product Disposal 10

1.3.4 Trademarks 10

2. Product 11

2.1 Product Components 12

2.1.1 Detector 12

2.1.2 Battery Pack 13

2.1.3 SCU (System Control Unit) 14

2.1.4 Accessories 16

2.2 FXRD-3643VAW, FXRD-3643VAW PLUS 18

2.2.1 Specifications 18

2.2.2 Functions 19

2.2.3 Deco Sheet 21

2.2.4 Wireless Communication 22

2.2.5 Use Environment 22

2.2.6 Load Limit of Detector 23

2.3 FXRD-4343VAW, FXRD-4343VAW PLUS 24

2.3.1 Specifications 24

2.3.2 Functions 25

2.3.3 Deco Sheet 27

2.4 FXRD-2530VAW, FXRD-2530VAW PLUS 28

2.4.1 Specifications 28

2.4.2 Functions 29

2.4.3 Deco Sheet 31

2.5 Battery Pack (FXRB-04A) 32
2.5.1 Specifications 32
2.6 SCU Lite (FXRP-02A) 33
2.6.1 Specifications 33
2.6.2 Drawings 33
2.6.3 Functions 34
2.7 SCU mini (FXRS-04A) 35
2.7.1 Specifications 35
2.7.2 Drawings 35
2.7.3 Functions 36
2.8 Others 38
2.8.1 X-ray Generator (Recommended Exposure Condition) 38
2.8.2 Recommended Specifications of Workstation (PC) 38
2.8.3 Recommended Specifications of Grid 38
3. System Configuration 39
3.1 Detector Connection Methods 40
3.1.1 Wireless Connection 40
3.1.2 Wired Connection 41
3.2 Diagram 43
3.2.1 Block Diagram 43
3.2.2 Wiring Diagram 43
3.3 System Configuration 44
3.3.1 SCU AP Mode 44
3.3.2 Tether Interface Mode 45
3.3.3 External AP Mode 46
3.3.4 AP Switching 47
3.3.5 Sync Wireless Settings 48
3.4 Generator Interface 49
3.4.1 AED (Auto Exposure Detection) Interface 49
3.4.2 DR Trigger Interface 51
3.5 Configuring DR Trigger Interface 53
3.5.1 Trigger Interface Way 53
3.5.2 Packet Trigger 53
3.5.3 Line Trigger 54
3.5.4 EXT_INF Port Pin Map 55
3.5.5 Input / Output Circuit 56
4. Settings 57

4.1 Product Installation 58
4.1.1 Connecting SCU mini (FXRS-04A) 58
4.1.2 Booting SCU mini (FXRS-04A) 59
4.1.3 Connecting SCU Lite (FXRP-02A) 60
4.1.4 Booting Up SCU Lite (FXRP-02A) 61
4.1.5 Booting up the Detector 61
4.2 Device Setting 62
4.2.1 Software Installation 62
4.2.2 Setting Detector and SCU 62
4.3 Diagnosis of Devices 63
4.3.1 Diagnosing Images 63
4.3.2 Diagnosing Battery Pack 64
4.3.3 Diagnosing Communication Status 65
4.3.4 Diagnosing Communication Speed 68
4.3.5 Self-Diagnosis 69
5. Maintenance 72
5.1 Product Initialization 73
5.1.1 SCU Initialization 73
5.1.2 Detector Initialization 74
5.1.3 Wireless Initialization of Detector 75
5.2 Detector Power Save Function 76
5.3 How to Replace the Battery Pack 78
5.3.1 Replacing the Battery of FXRD-3643VAW / FXRD-3643VAW PLUS / FXRD-4343VAW / FXRD-4343VAW PLUS 79
5.3.2 Replacing the Battery of FXRD-2530VAW / FXRD-2530VAW PLUS 81
6. Troubleshooting 82
6.1 Troubleshooting 83
6.1.1 Troubleshooting Guide 83
6.1.2 Fail to Turn the Detector On 83
6.1.3 The Power Switch of SCU or Status LED is not worked normally 83
6.1.4 Communication Test is failed 84
6.1.5 There is no problem in communication connection, but no image is acquired 84
6.1.6 Getting Abnormal Images 85
6.1.7 Battery Pack or Installation Part of Battery is Getting Hot 85
7. Information 86
7.1 Service Information 87

7.1.1 Product Lifetime 87
7.1.2 Regular Inspection and Maintenance 87
7.1.3 Repair 87
7.1.4 Replacement Parts Support 87
7.1.5 Consumables 87

7.2 Warranty 88

7.3 Revision History 89

1. Instruction

This section gives basic information of this manual and products.

Document Guide

Intended Use

Product Use

1.1 Document Guide

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

1.1.1 Caution

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

1.1.2 Target Audience

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

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.

1.1.5 Contact Us

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

1.2 Intended Use

VIVIX-S VW detectors are digital X-ray imaging solution. They acquire images by detecting X-rays that has been passed through the human body. When X-ray photons pass through the scintillator in the detector, the photons convert to visible ray, and the visible ray is converted to electronic signals through TFTs – thin film transistors (a-Si). Then the detector digitalizes X-ray images and transfers them to the PC (workstation) for diagnostic review using an image display monitor. Advanced digital image processing also allows efficient diagnosis, information management, and sharing of image information over the network.

- The VIVIX-S VW detectors are used for the general-purpose diagnostic procedures, and as well as intended to replace radiographic film / screen systems.
- The VIVIX-S VW detectors are not intended for mammography applications.
- Les détecteurs VIVIX-S VW sont utilisés pour les procédures de diagnostic à usage général et pour remplacer les systèmes film / écran radiographiques.
- Les détecteurs VIVIX-S VW ne sont pas destinés aux applications de mammographie.

1.2.1 Features

- Since VIVIX-S VW detectors are compatible with a conventional film cassette, they enable to replace the analog radiographic diagnosis.
- VIVIX-S VW detectors provide high resolution digital images. The resolution varies depending on the models as follows.
  - **FXRD-3643VAW,** FXRD-3643VAW PLUS : 140μm pixel pitch sensor (Approx. 7.9 Mega Pixels)
  - **FXRD-4343VAW,** FXRD-4343VAW PLUS : 140μm pixel pitch sensor (Approx. 9.4 Mega Pixels)
  - **FXRD-2530VAW,** FXRD-2530VAW PLUS : 124μm pixel pitch sensor, (Approx. 5.2 Mega Pixels)
- The scintillator provides two types of CsI, and you can use one of the detectors.
- VIVIX-S VW detectors support IEEE 802.11n/ac to acquire images without a wired connection in anytime, anywhere.
- Checks the connecting status of the detector and battery remains through OLED Display.
- Makes direct wireless communication with the built-in wireless AP function. (Inside AP™)
- Makes quick application of various functions with two buttons on the side of the detector.
- Supports the stable and reliable AED (Auto Exposure Detection) function. (Anytime™)
- Designed with a thin and light structure, it is portable for easy shooting anytime, anywhere.
- Designed for easy carrying
- You can use the product with cable connection (tether interface cable) depending on the using environment.

1.3 Product Use

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

1.3.1 Product Usage

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

1.3.2 Disclaimer

1 In no event shall Vieworks be liable for damage or loss arising from a fire, earthquake, any 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 of this manual are not followed.
4 In no event shall Vieworks be liable for any damage arising from moving, alteration, inspection or repair the product by a person other than an authorized service engineer by Vieworks.
5 In no event shall Vieworks 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 region in which the product is being used.
7 The user is responsible for maintaining the privacy of image data acquired 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.

1.3.3 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 that conforms to the laws and regulations applicable in your area.

European Union (and EEA*) only

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

This product should be handed over to a designated collection point, e.g., on an authorized one-for-one basis when you buy a new similar product or to an authorized collection site for recycling electrical and electronic equipment (EEE). Improper handling of this type of waste could have a negative impact on the environment and human health due to potentially hazardous substances that are generally associated with EEE. At the same time, your cooperation in the correct disposal of this product will contribute to the effective usage of natural resources. For more information on where you can drop off your waste equipment for recycling, please contact your local city office, waste authority, approved WEEE scheme, or your household waste disposal service.

*EEA: Norway, Iceland, and Liechtenstein

1.3.4 Trademarks

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2. Product

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

Product Components

FXRD-3643VAW, FXRD-3643VAW PLUS

FXRD-4343VAW, FXRD-4343VAW PLUS

FXRD-2530VAW, FXRD-2530VAW PLUS

Battery Pack (FXRB-04A)

SCU Lite (FXRP-02A)

SCU mini (FXRS-04A)

Others

2.1 Product Components

2.1.1 Detector

Product Name	Image	Model/Description
VIVIX-S VW Wireless Detector		※ Basic: Battery Pack (2ea) • FXRD-3643VAW (3.15kg) • FXRD-3643VAW PLUS (3.15kg) ※ Option: Battery Pack 1ea • FXRD-3643VAW (2.95kg) • FXRD-3643VAW PLUS (2.95kg)
		※ Basic: Battery Pack (2ea) • FXRD-4343VAW (3.7kg) • FXRD-4343VAW PLUS (3.7kg) ※ Option: Battery Pack 1ea • FXRD-4343VAW (3.5kg) • FXRD-4343VAW PLUS (3.5kg)
		※ Basic: Battery Pack (1ea) • FXRD-2530VAW (1.9kg)

- The design of the decor sheet attached to the detector can be different for each customer.
- The battery pack is built into the detector. The battery pack can be replaced at the end of its life.
- FXRD-3643VAW, FXRD-3643VAW PLUS, FXRD-4343VAW, and FXRD-4343VAW PLUS are equipped two battery packs, and only one can be installed as an option upon request.
- FXRD-2530VAW and FXRD-2530VAW PLUS can only be equipped with one battery pack.

	• La conception de la feuille de décoration fixée au détecteur peut être différente pour chaque client. • La batterie est intégrée au détecteur. La batterie peut être remplacée en fin de vie. • FXRD-3643VAW, FXRD-3643VAW PLUS, FXRD-4343VAW et FXRD-4343VAW PLUS sont équipés de deux batteries, dont une seule peut être installée en option sur demande. • Les FXRD-2530VAW et FXRD-2530VAW PLUS ne peuvent être équipées que d'une seule batterie.

2.1.2 Battery Pack

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

	• The battery pack is built into the detector. **VIVIX-S VW** detectors (FXRD-3643VAW, FXRD-3643VAW PLUS, FXRD-4343VAW, FXRD-4343VAW PLUS, FXRD-2530VAW, FXRD-2530VAW PLUS) use the same battery packs. • La batterie est intégrée au détecteur. Les détecteurs VIVIX-S VW (FXRD-3643VAW, FXRD-3643VAW PLUS, FXRD-4343VAW, FXRD-4343VAW PLUS, FXRD-2530VAW, FXRD-2530VAW PLUS) utilisent les mêmes batteries.

	• When replacing the battery pack, use only the battery pack specified for the **VIVIX-S VW** detector. • Lorsque vous remplacez la batterie, utilisez uniquement la batterie spécifiée pour le détecteur VIVIX-S VW.

2.1.3 SCU (System Control Unit)

Component		Model / Description
		• FXRP-02A (330g)
SCU Lite (Option)		• DC Adapter ▫ BPM030S24F10 / DC 24V, Max 1.33A
		• AC Power Cable (2m) • 110V (1EA) / 220V (1EA)
SCU mini (Option)		• FXRS-04A (1.2kg)
		• AC-DC adapter ▫ BPM060S24F10 / DC 24V Max. 2.7A

- AC Power Cable (2m)
- 110V (1EA) / 220V (1EA)

	• SCU is not a standard item provided to customers. If necessary, the user can optionally purchase the desired SCU according to the inteded use. • SCU Lite does not support wireless connections. Only use it as a wired connection. • The 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, l'utilisateur peut éventuellement acheter le SCU souhaité en fonction de l'utilisation prévue. • SCU Lite ne prend pas en charge les connexions sans fil. Utilisez-le uniquement comme connexion filaire. • Le 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 de détection séparé.

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

2.1.4 Accessories

Type	Image	Description
AC-DC Adaptor		• AC-DC adapter ▫ BM090S18F02 / DC 18V, Max. 5A
Hardware Manual CD		• Detector Operation manuals • Detector Service manuals
Software / Software Manual CD (VXvue)		• Software files • Software manuals
Cables (Option)		• Tether Interface Cable (7m)
		• Generator Interface Cable (15m)
		• UTP LAN Cable (15m, Direct) ▫ CAT 5E or CAT6 (or higher)

Velcro tape **(25mm x 50mm / 6ea)**		• Attached to the corners of bucky and the friction surface of a detector.
Velcro tape **(25mm x 100mm / 6ea)**		

- The cable is not a standard item provided to customers. If necessary, the user can optionally purchase the desired cable according to the intended use.
- A tether interface cable is required for wired connections.
- Le câble n'est pas un élément standard fourni aux clients. Si nécessaire, l'utilisateur peut éventuellement acheter le câble souhaité en fonction de l'utilisation envisagée.
- Un câble d'interface d'attache est requis pour les connexions câblées.

- Use only AC-DC adapters and cables designated for the VIVIX-S VW 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.
- Utilisez uniquement des adaptateurs AC-DC et des câbles conçus pour les détecteurs VIVIX-S VW.
- L'utilisation d'accessoires et de câbles autres que ceux approuvés et vendus par Vieworks Co., Ltd. peut entraîner une libération accrue des ondes électromagnétiques ou une baisse de la stabilité de l'équipement.
- Les équipements accessoires connectés aux interfaces analogiques et numériques doivent être certifiés conformément aux normes CEI 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 du signal configure un système médical et doit donc s'assurer que celui-ci est conforme aux exigences de la norme système CEI 60601-1.
- Consultez votre distributeur ou le fabricant si vous avez des problèmes

2.2 FXRD-3643VAW, FXRD-3643VAW PLUS

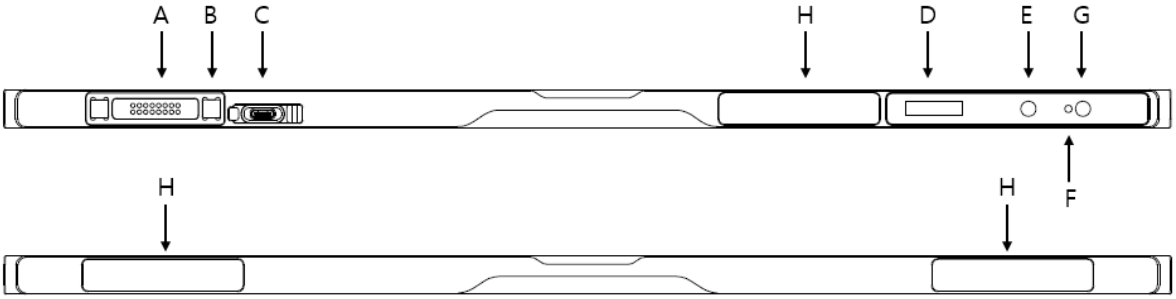
2.2.1 Specifications

Item	Specifications
Model	• FXRD-3643VAW • FXRD-3643VAW PLUS
Image Sensor	• TFT: a-Si (Amorphous Silicon)
X-ray Scintillator Type	• FXRD-3643VAW : CsI type A • FXRD-3643VAW PLUS : CsI type B
Pixel Pitch	• 0.14㎜ (140㎛)
Field of View	• 36cm x 43cm (14" x 17")
Active Area (H x V)	• 358.4㎜ × 430.08㎜
Active Array	• 2560 x 3072 pixels
Effective Area	• 355.04㎜ x 426.72㎜
Effective Array	• 2536 x 3048 pixels
Grayscale	• 16 bit
Spatial Resolution	• Min. 3.5 lp/㎜
Image Acquisition Time (Wired)	• Up to 3 sec. (Set exposure time to 500ms / except exposure time)
Image Acquisition Time (Wireless)	• Up to 4.5 sec. (IEEE802.11n, MIMO 2x2, 5GHz, 40MHz) • Up to 3 sec. (IEEE802.11ac, MiMO 3x3, 5GHz, 80MHz) (Exposure time is set to 500ms, except exposure time)
Cycle Time	• Min. 4 sec. (with optimal wired / wireless environment, exposure time is set to 500ms, excluding software processing time)
X-ray Synchronous Control	• AED (Auto Exposure Detection) • DR Trigger (External Line Trigger)
Power Supply	• Powered from SCU via tether interface cable: DC 24V, Max. 1.0A • Powered via AC-DC adapter: DC 18V, Max. 4.44A • Powered via 2 battery packs: DC 9 ~13.2V, Max. 78.54Wh
Power Consumption	• Max. 24W (without battery charged) • Max. 80W (when charging battery)
Operating Time (Early life of battery)	• One battery pack ▫ 7 hours (image acquisition every 100 seconds), 8 hours (standby) • Two battery packs ▫ 14 hours (image acquisition every 100 seconds), 16 hours (standby)
Dimensions (H × W × D)	• 384.0㎜ × 460.0㎜ × 15.0㎜
Weight (including battery pack)	• With one battery pack : 2.95kg • With two battery packs : 3.15kg
Image Transmission	• Wired: Gigabit Ethernet (1000BASE-T) via Power over Ethernet (PoE) • Wireless: IEEE 802.11n / ac (2.4GHz / 5GHz), 3 antennas
Data Transmission Speed (Wired)	• Max. 1Gbps
Data Transmission Speed (Wireless)	• Max. 300Mbps (IEEE802.11n, MIMO 2x2, 5GHz, 40MHz) • Max. 1300Mbps (IEEE802.11ac, MIMO 3x3, 5GHz, 80MHz)

- The longer you use the battery, the smaller its capacity.
- Plus vous utilisez la batterie, plus sa capacité est réduite.

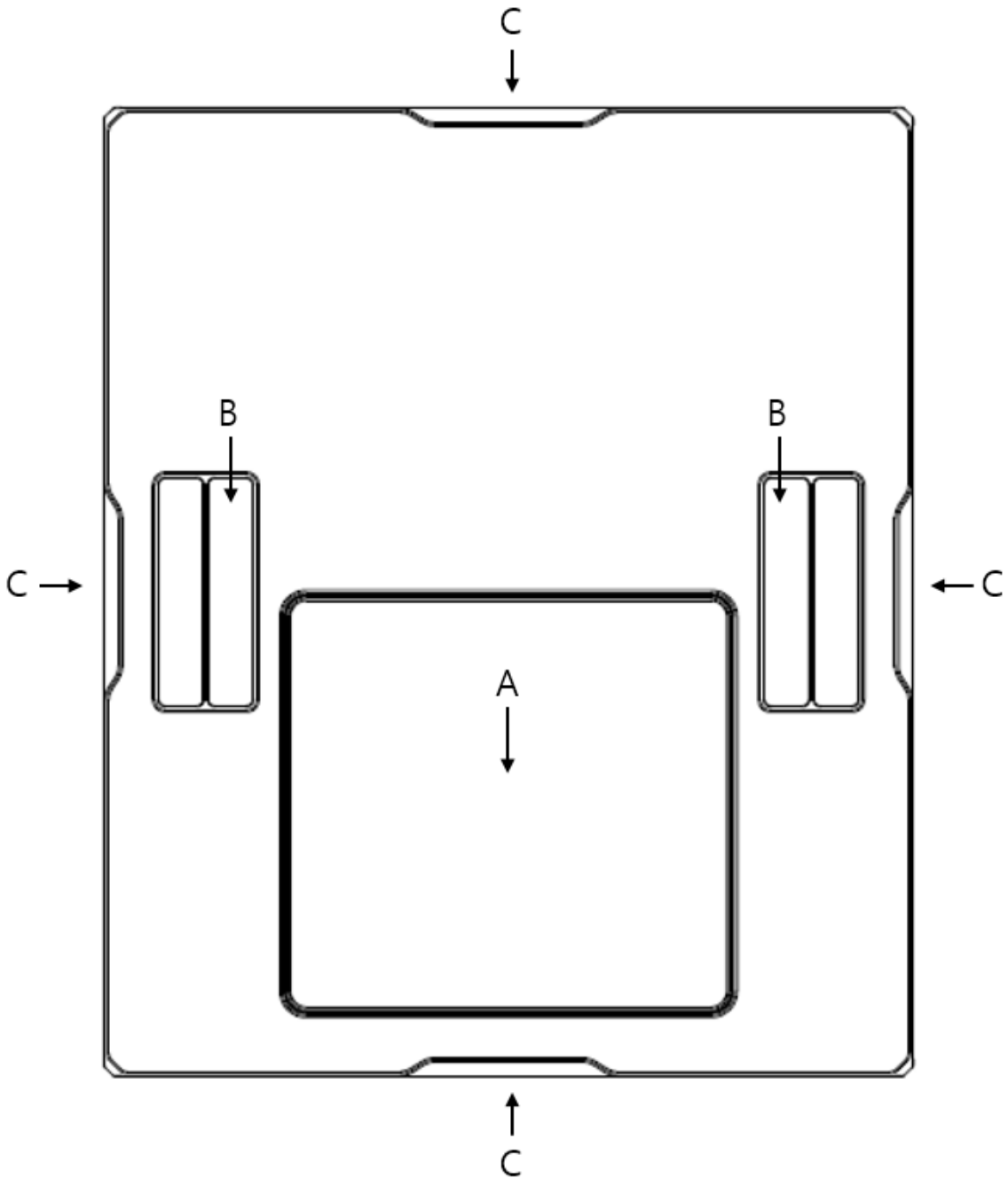
2.2.2 Functions

Side



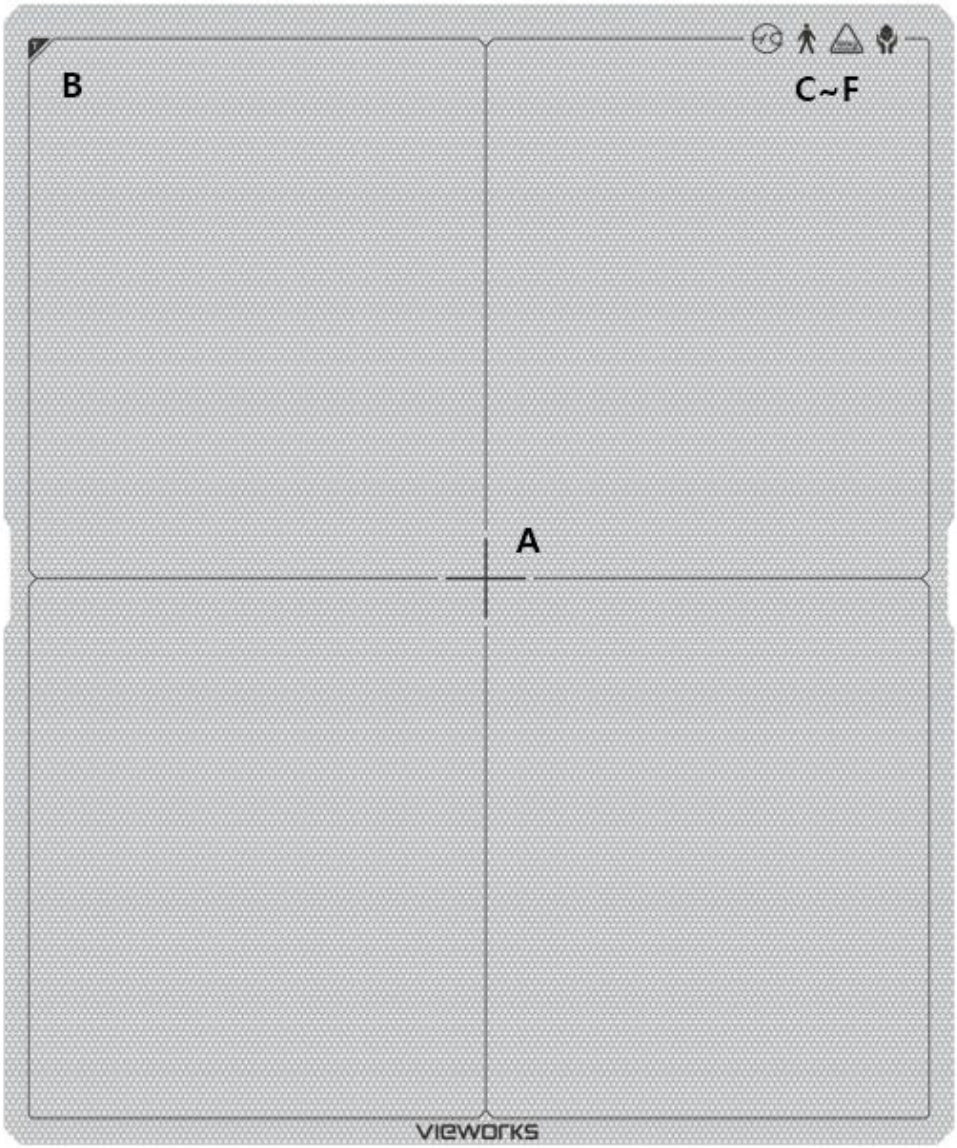
	Name	Description
A	**Tether Interface Connector**	Tether interface cable connector. • Used for wired connection between a detector and SCU.
B	**Magnet for fixing the tether interface**	Used for fixing a tether interface cable
C	**AC-DC Adapter Connector**	• Connector for fastening the AC-DC adapter • Used for fast battery charging
D	**OLED Display**	• Displays battery status • Displays wired / wireless connection status • Displays sleep mode status
E	**AP Button**	• Button for changing AP setting (Detector AP mode ON / OFF, AP switching when detector is in STATION mode) • Changes OLED screen
F	**Power Indicator LED**	• Displays system power status • Displays system boot status
G	**Power Button**	• System power on/off • Changes OLED screen
H	**Antenna for Wireless LAN**	Antennas for wireless communication (3ea)

Rear



	Name	Description
A	**Battery Pack Cover**	The cover needs to be opened and closed when replacing the battery pack.
B	**Handle**	A handle for carrying a detector
C	**Lift Structure**	Used when the detector is placed on flat surface

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~F	**Certification logo**	Indicates the certification logos relating to a medical device.

- Image starting point (0.0) of this detector is located nearby the tether interface connector. 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.
- Le point de départ de l'image (0,0) de ce détecteur est situé à proximité du connecteur de l'interface d'attache. 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	IEEE 802.11n/ac
Frequency range	2.412 ~ 2.472㎓ (13 Channels) 5.18 ~ 5.24㎓ (4 Channels) 5.745 ~ 5.805GHz (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	2.4㎓: Max. 19dBm (per chain) 5㎓: Max. 18dBm (per chain)
Security	WPA2-PSK
Antenna	Dual Band Antennas (3EA, In-built)

- The wireless communication specifications of the **VIVIX-S VW** detectors (FXRD-3643VAW, FXRD-3643VAW PLUS, FXRD-4343VAW, FXRD-4343VAW PLUS, FXRD-2530VAW, FXRD-2530VAW PLUS) are the same.
- Les spécifications de communication sans fil des détecteurs VIVIX-S VW (FXRD-3643VAW, FXRD-3643VAW PLUS, FXRD-4343VAW, FXRD-4343VAW PLUS, FXRD-2530VAW, FXRD-2530VAW PLUS) sont identiques.

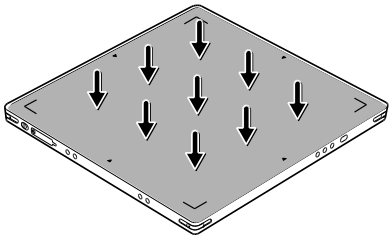
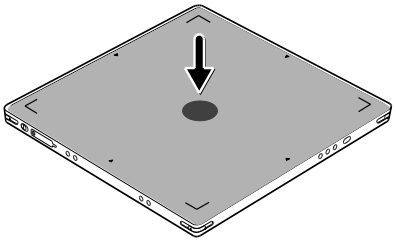
2.2.5 Use Environment

Item	Operation	Storage & Transportation
Temperature	0 ~ +40℃	-15 ~ +55℃
Humidity	5 ~ 90% (Non-condensing)	5 ~ 90% (Non-condensing)
Atmospheric pressure	700 ~ 1060 hPa	500 ~ 1060 hPa
Shock	20G	30G
Vibration	2G	5G

- The operating environment specifications of **VIVIX-S VW** detectors (FXRD-3643VAW, FXRD-3643VAW PLUS, FXRD-4343VAW, FXRD-4343VAW PLUS, FXRD-2530VAW, FXRD-2530VAW PLUS) are the same.
- Les spécifications d'environnement d'exploitation des détecteurs VW VIVIX-S (FXRD-3643VAW, FXRD-3643VAW PLUS, FXRD-4343VAW, FXRD-4343VAW PLUS, FXRD-2530VAW, FXRD-2530VAW PLUS) sont identiques.

- Be sure to handle the product within the operating environment. Otherwise, malfunction or electric shock may occur.
- Veillez à manipuler le produit dans l'environnement d'exploitation. Sinon, un dysfonctionnement ou un choc électrique pourrait survenir.

2.2.6 Load Limit of Detector

Uniform load	Local load
Over the whole surface	Center diameter 40 ㎜
Max. 300 kg	Max. 150 kg
	

- Do not let the paitent or object heavier than load limit be on the detector. Then, detector can be damaged.
- Do not allow the patient to stand completely on the detector or lay down on it. Even weights within the load limits can seriously affect internal components such as sensors.
- Ne laissez pas le patient ou l'objet plus lourd que la limite de charge être sur le détecteur. Ensuite, le détecteur peut être endommagé.
- Ne laissez pas le patient se tenir complètement sur le détecteur ou s'allonger dessus. Même des poids dans les limites de charge peuvent sérieusement affecter les composants internes tels que les capteurs.

- The load limit specifications for **VIVIX-S VW** detectors (FXRD-3643VAW, FXRD-3643VAW PLUS, FXRD-4343VAW, FXRD-4343VAW PLUS, FXRD-2530VAW, FXRD-2530VAW PLUS) are the same.
- Les spécifications de limite de charge pour les détecteurs VIVIX-S VW (FXRD-3643VAW, FXRD-3643VAW PLUS, FXRD-4343VAW, FXRD-4343VAW PLUS, FXRD-2530VAW, FXRD-2530VAW PLUS) sont identiques.

2.3 FXRD-4343VAW, FXRD-4343VAW PLUS

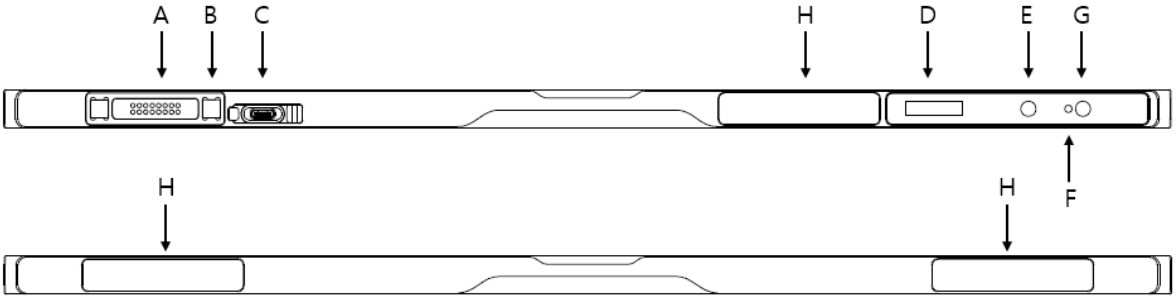
2.3.1 Specifications

Item	Specifications
Model	• FXRD-4343VAW • FXRD-4343VAW PLUS
Image Sensor	• TFT: a-Si (Amorphous Silicon)
X-ray Scintillator Type	• FXRD-4343VAW: CsI A type • FXRD-4343VAW PLUS: CsI B type
Pixel Pitch	• 0.14㎜ (140㎛)
Field of View	• 43cm x 43cm (17″ x 17″)
Active Area (H x V)	• 430.08㎜ × 430.08㎜
Active Array	• 3072 x 3072 pixels
Effective Area	• 426.72㎜ x 426.72㎜
Effective Array	• 3048 x 3048 pixels
Grayscale	• 16 bit
Spatial Resolution	• Min. 3.5 lp/㎜
Image Acquisition Time (Wired)	• Up to 3 sec. (Set exposure time to 500ms / except exposure time)
Image Acquisition Time (Wireless)	• Up to 4.5 sec. (IEEE802.11n, MIMO 2x2, 5GHz, 40MHz) • Up to 3 sec. (IEEE802.11ac, MiMO 3x3, 5GHz, 80MHz) (Exposure time is set to 500ms, except exposure time)
Cycle Time	• Min. 4 sec. (with optimal wired / wireless environment, exposure time is set to 500ms, excluding software processing time)
X-ray Synchronous Control	• AED (Auto Exposure Detection) • DR Trigger (External Line Trigger)
Power Supply	• Powered from SCU via tether interface cable: DC 24V, Max. 1.0A • Powered via AC-DC adapter: DC 18V, Max. 4.44A • Powered via 2 battery packs: DC 9 ~13.2V, Max. 78.54Wh
Power Consumption	• Max. 24W (without battery charged) • Max. 80W (when charging battery)
Operating Time (Early life of battery)	• One battery pack ▫ 6.5 hours (image acquisition every 100 seconds), 8 hours (standby) • Two battery packs ▫ 13 hours (image acquisition every 100 seconds), 16 hours (standby)
Dimensions (H × W × D)	• 460.0㎜ × 460.0㎜ × 15.0㎜
Weight (including battery pack)	• With one battery pack : 3.5kg • With two battery packs : 3.7kg
Image Transmission	• Wired: Gigabit Ethernet (1000BASE-T) via Power over Ethernet (PoE) • Wireless: IEEE 802.11n / ac (2.4GHz / 5GHz), 3 antennas
Data Transmission Speed (Wired)	• Max. 1Gbps
Data Transmission Speed (Wireless)	• Max. 450Mbps (IEEE802.11n, MIMO 2x2, 5GHz, 40MHz) • Max. 1300Mbps (IEEE802.11ac, MIMO 3x3, 5GHz, 80MHz)

- The longer you use the battery, the smaller its capacity.
- Plus vous utilisez la batterie, plus sa capacité est réduite.

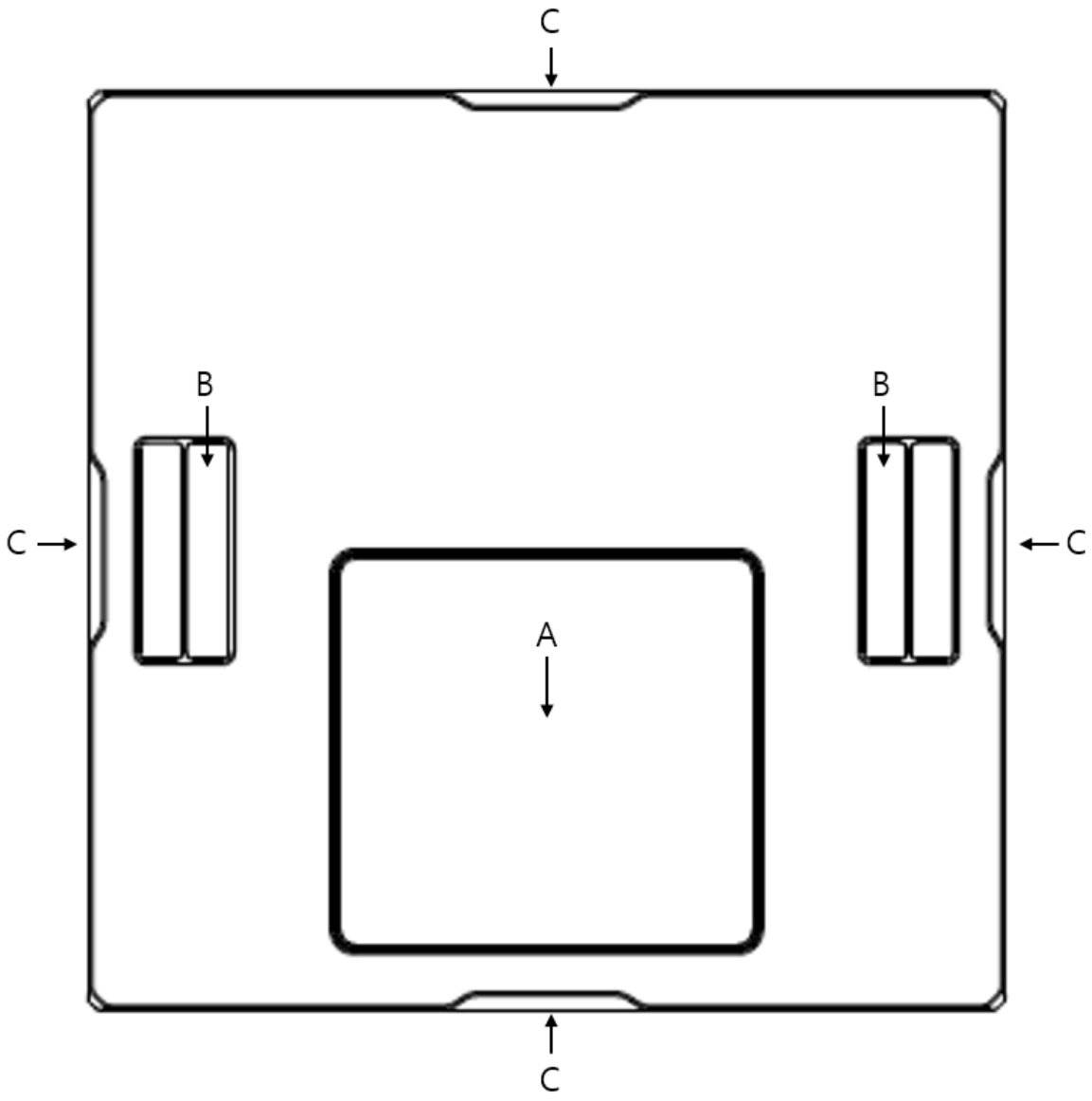
2.3.2 Functions

Side



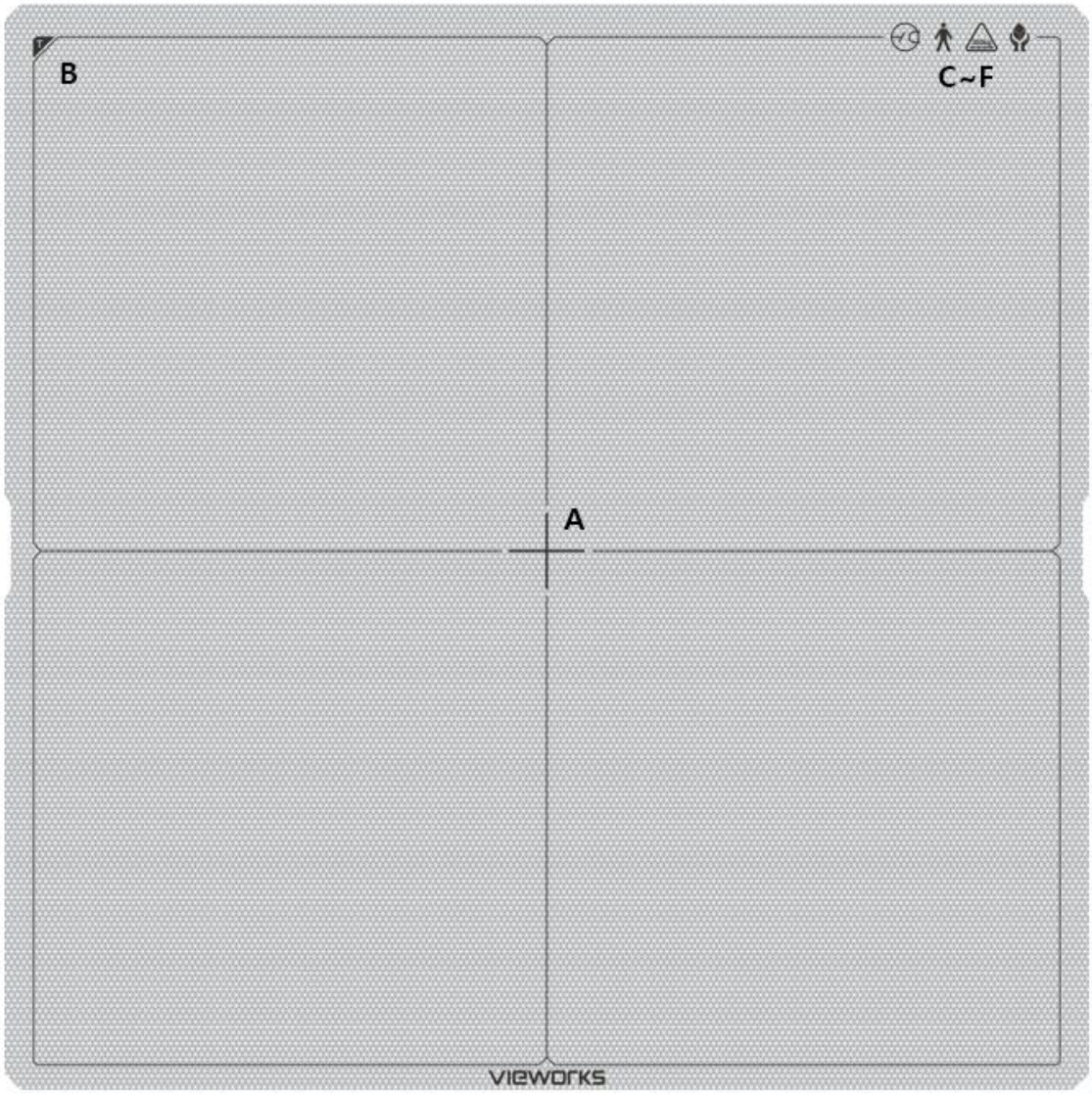
	Name	Description
A	**Tether Interface Connector**	Tether interface cable connector. • Used for wired connection between a detector and SCU.
B	**Magnet for fixing the tether interface**	Used for fixing a tether interface cable
C	**AC-DC Adapter Connector**	• Connector for fastening the AC-DC adapter • Used for fast battery charging
D	**OLED Display**	• Displays battery status • Displays wired / wireless connection status • Displays sleep mode status
E	**AP Button**	• Button for changing AP setting (Detector AP mode ON / OFF, AP switching when detector is in STATION mode) • Changes OLED screen
F	**Power Indicator LED**	• Displays system power status • Displays system boot status
G	**Power Button**	• System power on/off • Changes OLED screen
H	**Antenna for Wireless LAN**	Antennas for wireless communication (3ea)

Rear



	Name	Description
A	**Battery Pack Cover**	The cover needs to be opened and closed when replacing the battery pack.
B	**Handle**	A handle for carrying a detector
C	**Lift Structure**	Used when the detector is placed on flat surface

2.3.3 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~F	**Certification logo**	Indicates the certification logos relating to a medical device.

- Image starting point (0.0) of this detector is located nearby the tether interface connector. 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.
- Le point de départ de l'image (0,0) de ce détecteur est situé à proximité du connecteur de l'interface d'attache. 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.

2.4 FXRD-2530VAW, FXRD-2530VAW PLUS

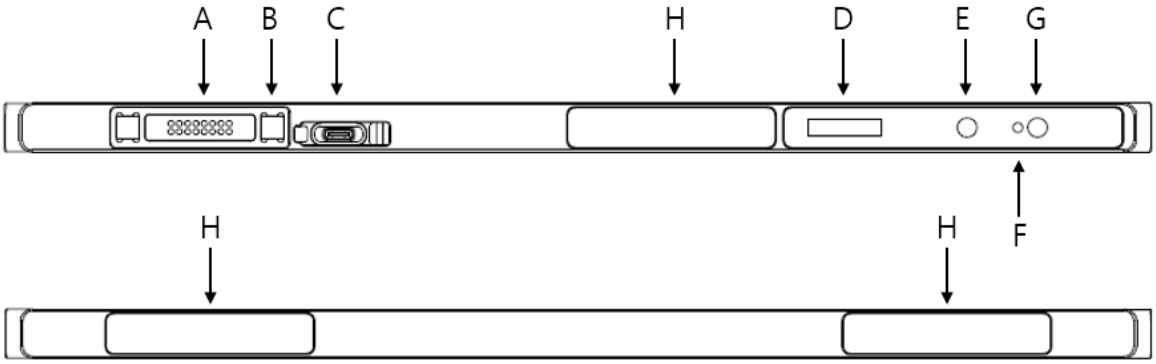
2.4.1 Specifications

Item	Specifications
Model	• FXRD-2530VAW / FXRD-2530VAW PLUS
Image Sensor	• TFT: a-Si (Amorphous Silicon)
X-ray Scintillator Type	• FXRD-2530VAW: CsI A type • FXRD-2530VAW PLUS: CsI B type
Pixel Pitch	• 0.124㎜ (124㎛)
Field of View	• 25cm x 32cm (10″ x 12″)
Active Area (H x V)	• 253.95㎜ × 317.44㎜
Active Array	• 2048 x 2560 pixels
Effective Area	• 251.0㎜ x 314.5㎜
Effective Array	• 2024 x 2536 pixels
Grayscale	• 16 bit
Spatial Resolution	• Min. 4.0 lp/㎜
Image Acquisition Time (Wired)	• Up to 3 sec. (Set exposure time to 500ms / except exposure time)
Image Acquisition Time (Wireless)	• Up to 4.5 sec. (IEEE802.11n, MIMO 3x3, 5GHz, 40MHz) • Up to 3 sec. (IEEE802.11ac, MiMO 3x3, 5GHz, 80MHz) (Exposure time is set to 500ms, except exposure time)
Cycle Time	• Min. 4 sec. (with optimal wired / wireless environment, exposure time is set to 500ms, excluding software processing time)
X-ray Synchronous Control	• AED (Auto Exposure Detection) • DR Trigger (External Line Trigger)
Power Supply	• Powered from SCU via tether interface cable: DC 24V, Max. 0.625A • Powered via AC-DC adapter: DC 18V, Max. 2.78A • Powered via 2 battery packs: DC 9 ~13.2V, Max. 39.27Wh
Power Consumption	• Max. 15W (without battery charged) • Max. 50W (when charging battery)
Operating Time (Early life of battery)	• One battery pack ▫ 7 hours (image acquisition every 100 seconds), 8 hours (standby)
Dimensions (H × W × D)	• 287.0㎜ × 350.0㎜ × 15.0㎜
Weight (including battery pack)	• 1.9kg
Image Transmission	• Wired: Gigabit Ethernet (1000BASE-T) via Power over Ethernet (PoE) • Wireless: IEEE 802.11n / ac (2.4GHz / 5GHz), 3 antennas
Data Transmission Speed (Wired)	• Max. 1Gbps
Data Transmission Speed (Wireless)	• Max. 450Mbps (IEEE802.11n, MIMO 3x3, 5GHz, 40MHz) • Max. 1300Mbps (IEEE802.11ac, MIMO 3x3, 5GHz, 80MHz)

- The longer you use the battery, the smaller its capacity.
- Plus vous utilisez la batterie, plus sa capacité est réduite.

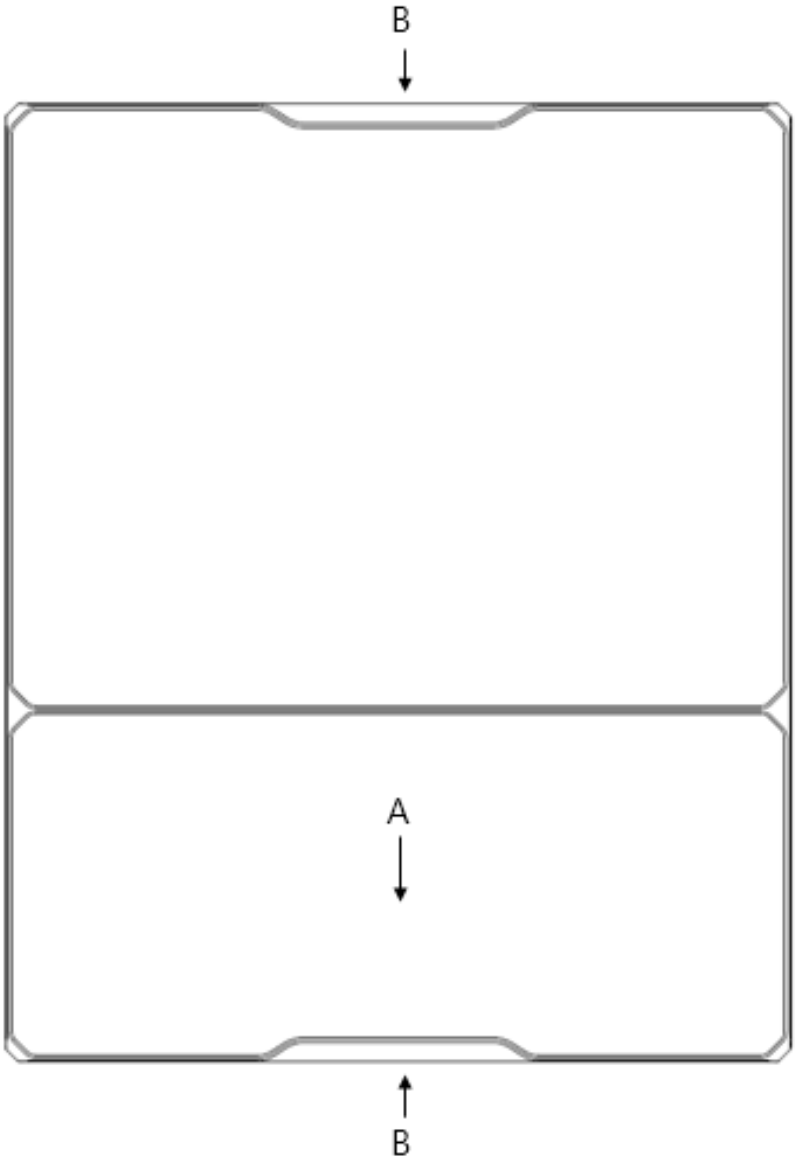
2.4.2 Functions

Side



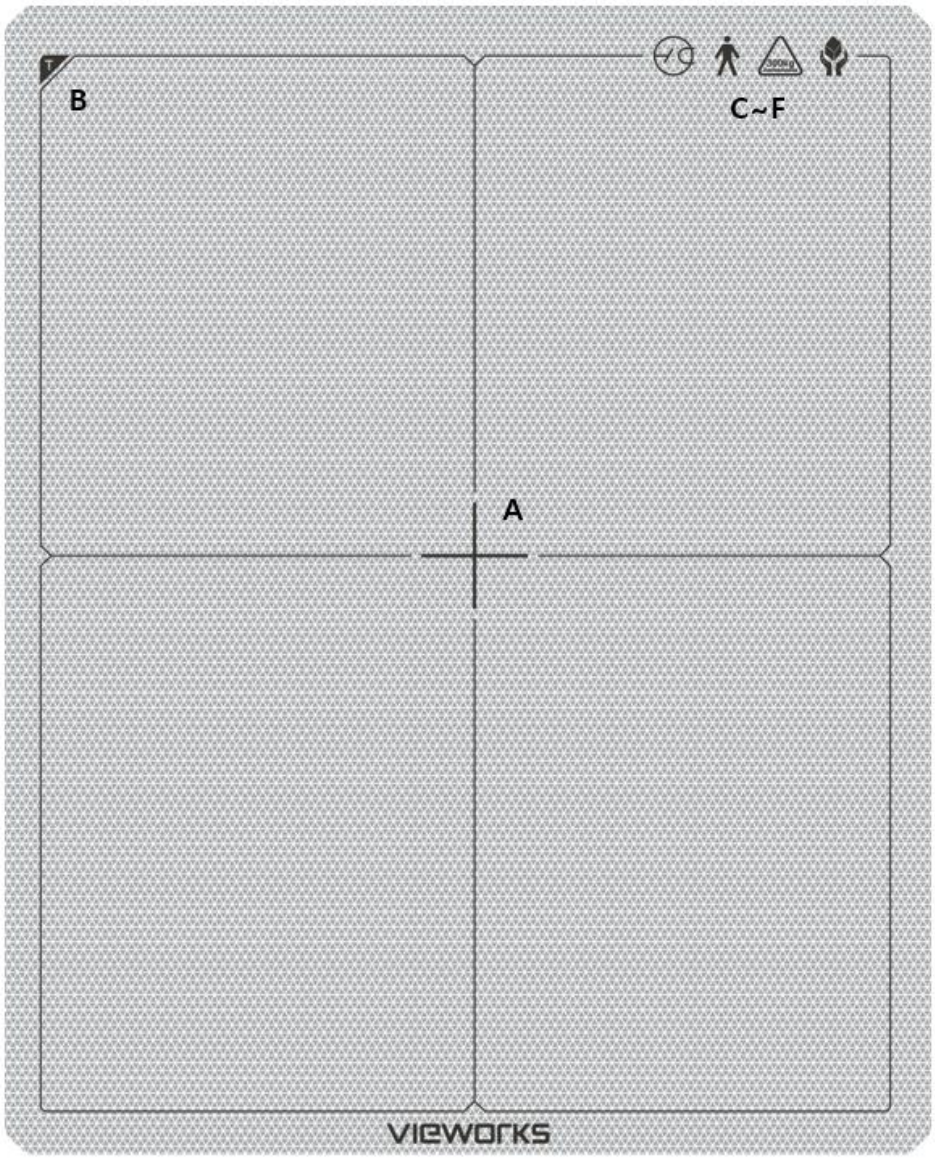
	Name	Description
A	**Tether Interface Connector**	Tether interface cable connector. • Used for wired connection between a detector and SCU.
B	**Magnet for fixing the tether interface**	Used for fixing a tether interface cable
C	**AC-DC Adapter Connector**	• Connector for fastening the AC-DC adapter • Used for fast battery charging
D	**OLED Display**	• Displays battery status • Displays wired / wireless connection status • Displays sleep mode status
E	**AP Button**	• Button for changing AP setting (Detector AP mode ON / OFF, AP switching when detector is in STATION mode) • Changes OLED screen
F	**Power Indicator LED**	• Displays system power status • Displays system boot status
G	**Power Button**	• System power on/off • Changes OLED screen
H	**Antenna for Wireless LAN**	Antennas for wireless communication (3ea)

Rear



	Name	Description
A	**Battery Pack Cover**	The cover needs to be opened and closed when replacing the battery pack.
C	**Lift Structure**	Used when the detector is placed on flat surface

2.4.3 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~F	**Certification logo**	Indicates the certification logos relating to a medical device.

- Image starting point (0.0) of this detector is located nearby the tether interface connector. 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.
- Le point de départ de l'image (0,0) de ce détecteur est situé à proximité du connecteur de l'interface d'attache. 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.

2.5 Battery Pack (FXRB-04A)

2.5.1 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.)

- Battery packs lose capacity over time.
- The life of a battery pack is the number of charge and discharge cycles until it reaches 80% or less of its initial capacity (nominal capacity).
- Les batteries perdent de leur capacité avec le temps.
- La durée de vie d'un bloc-batterie est fonction du nombre de cycles de charge et de décharge jusqu'à atteindre 80% ou moins de sa capacité initiale (capacité nominale).

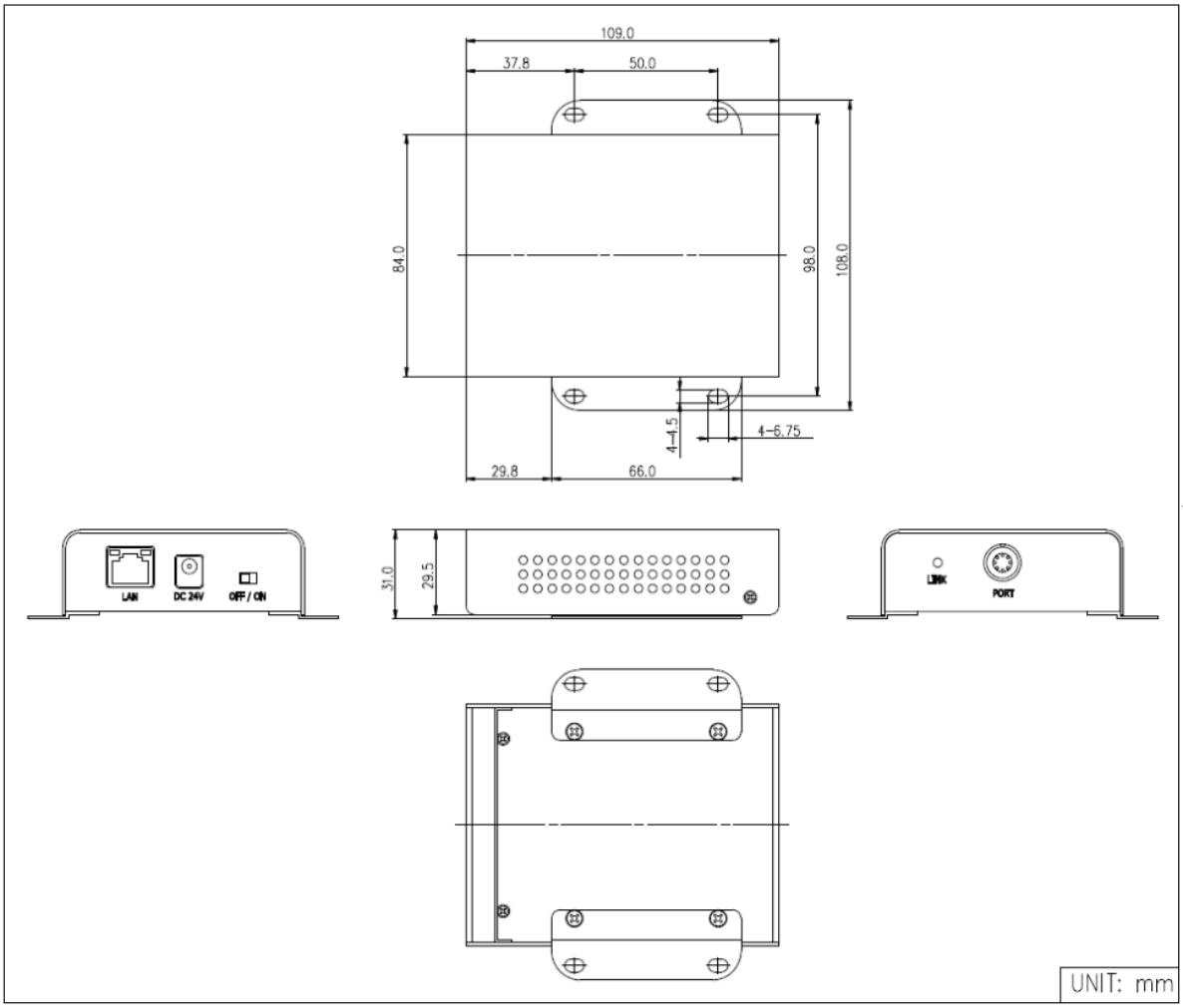
2.6 SCU Lite (FXRP-02A)

SCU Lite is a device that transmits images by wired connection between the detector and workstation.

2.6.1 Specifications

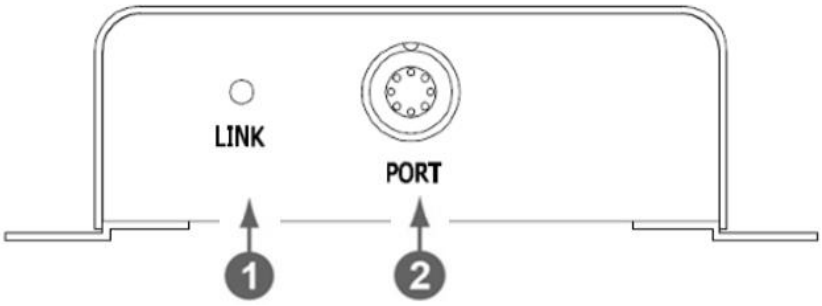
Item	Specifications
Model	• FXRP-02A
Power Supply	• Input: DC +24V 1.0A Max.
Cable Connection Port	• Gigabit Ethernet port (1ea) • PoE (Power over Ethernet) Port (1ea)
Dimensions (H × W × D)	• 108㎜ × 109㎜ × 29.5㎜
Weight	• 330g

2.6.2 Drawings



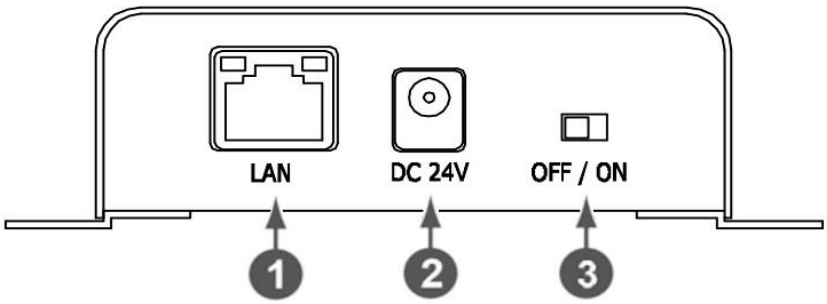
2.6.3 Functions

Front Side



No.	Name	Description
1	**LINK LED**	Indicates the status of **PoE** port. • Green : 1 Gbps • Yellow : 100 Mbps
2	**POE Port**	**PoE** (Power over Ethernet) port (1000BASE-T) • Communication between the detector and SCU Lite. • Supplies power to the detector.

Rear Side



No.	Name	Description
1	**LAN port**	Gigabit Ethernet port (1000BASE-T) • Communication between the workstation and SCU Lite.
2	**DC power input port**	DC +24V • Supplies power to SCU Lite.
3	**Power Switch**	Turns on/off the power of SCU Lite.

2.7 SCU mini (FXRS-04A)

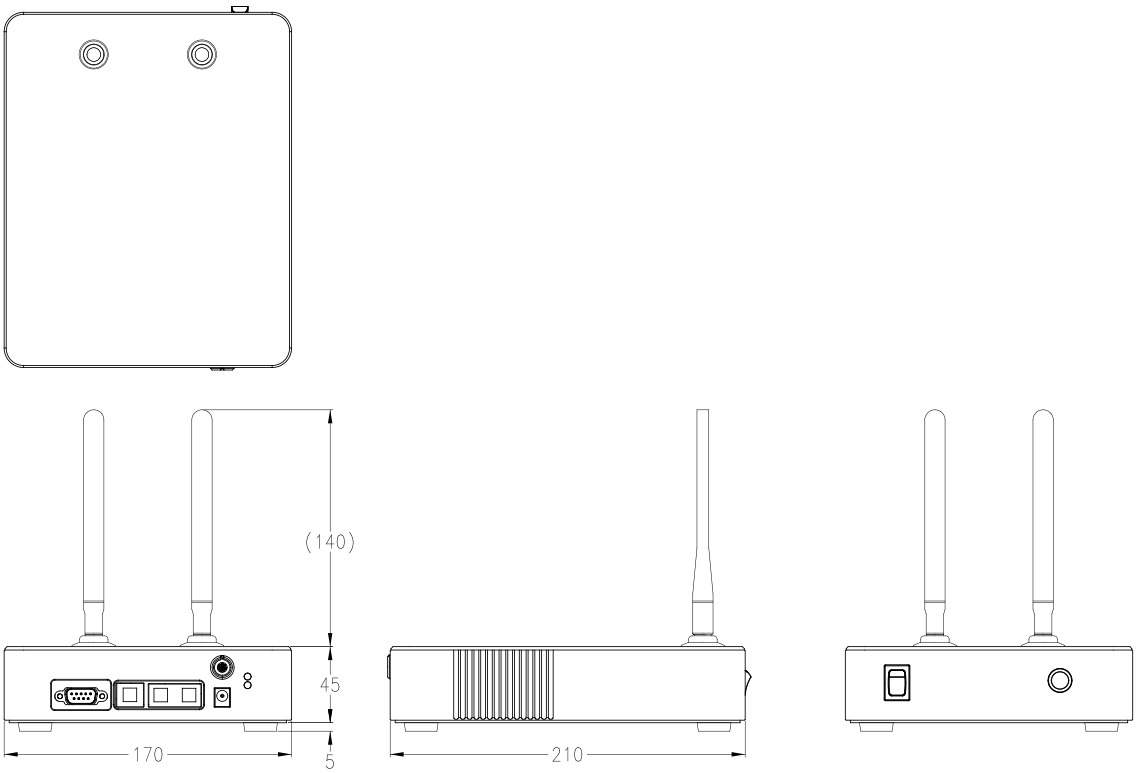
The SCU mini is located between the detector, the workstation and the X-ray generator to synchronize images and signals.

The SCU mini has a wired or wireless connection to the detector and a wired connection to the workstation. It can also be used by wired connection with the X-ray generator (DR Trigger).

2.7.1 Specifications

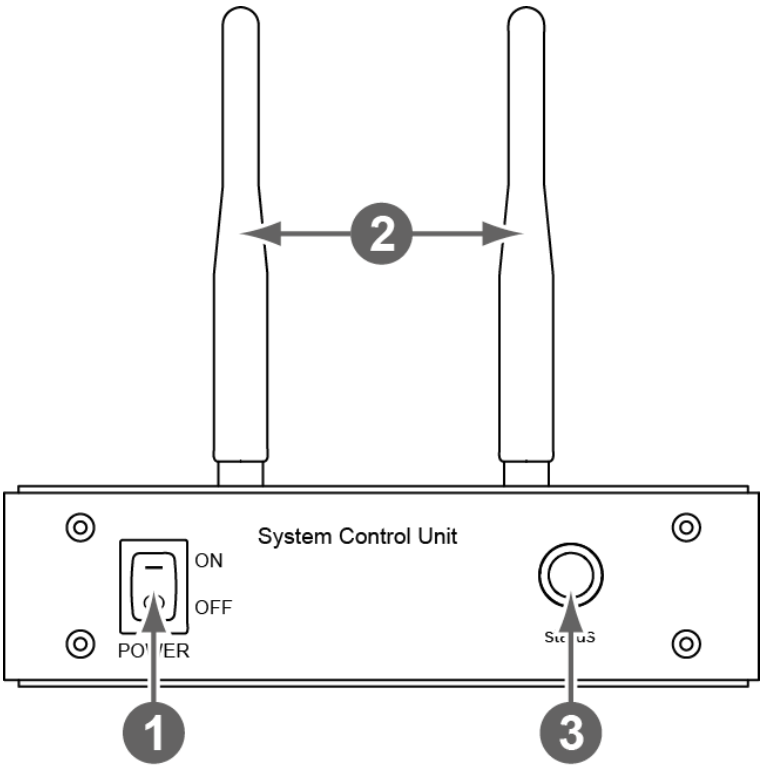
Item	Specifications
Model	• FXRP-04A
Power Supply	• Input: DC +24V, 2A Max.
Cable Connection Port	• Gigabit Ethernet port (3ea) • PoE (Power over Ethernet) Port (1ea)
Wireless Communication	• IEEE 802.11n (2.4 ㎓ / 5 ㎓)
Dimension (H × W × D)	• 210.0㎜ × 170.0㎜ × 45.0㎜
Antenna	• 140㎜ (2ea, dual band)
Weight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

2.7.2 Drawings



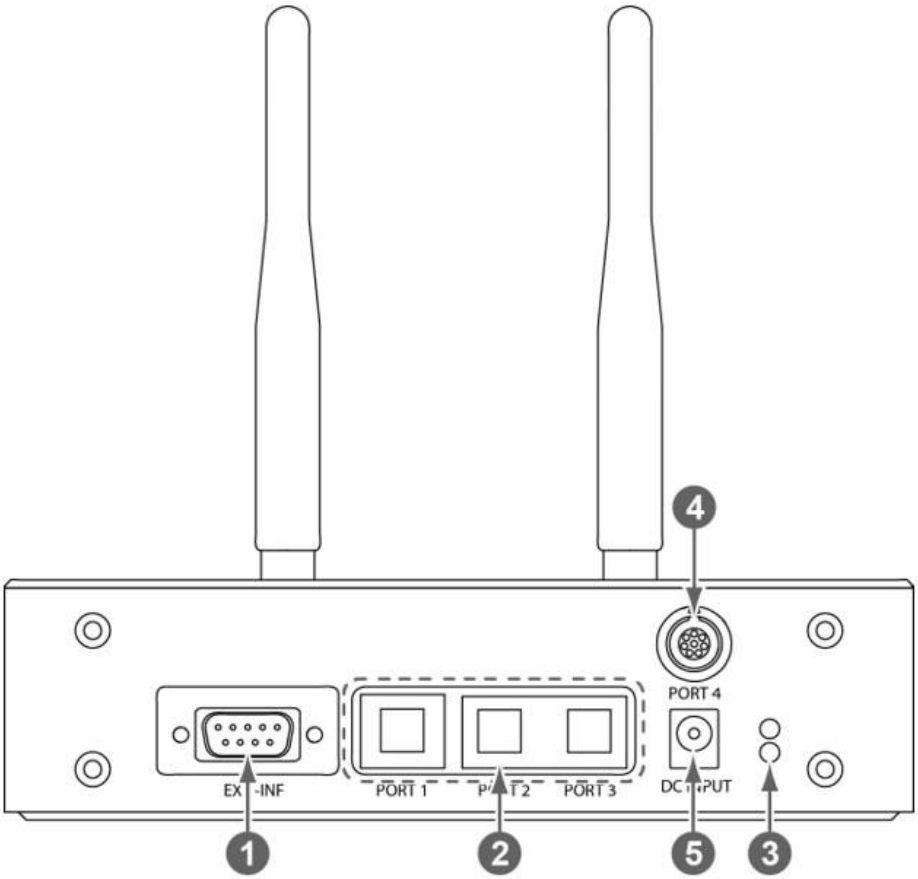
2.7.3 Functions

Front Side



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

Rear Side



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

2.8 Others

2.8.1 X-ray Generator (Recommended Exposure Condition)

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

2.8.2 Recommended Specifications of Workstation (PC)

Item	Recommended specification
Operating System	• VIVIX Setup ▫ Microsoft Windows 7 SP1 (32bit / 64bit) ▫ Microsoft Windows 8 / 8.1 / 8.2 SP1 (32bit / 64bit) ▫ Microsoft Windows 10 (32bit / 64bit)
CPU	Intel® Core™ i7-8700 CPU (or compatible CPU)
Memory	16GB or higher
Hard Disk	1TB or higher
LAN Card (only for detector communication)	• 1000 BASE-T Gigabit Ethernet card • Gigabit (for detector only) • Intel® PRO 1000 Series (Gigabit LAN Card for network interface) • Min.requiremetns ▫ Speed: 1Gbps or more ▫ Jumbo Frames: 9K ▫ Receive Descriptors: 2K (1024 or higher)
Monitor	• Minimum: 1280 × 768 or higher • Recommended: 1680 x 1050 or higher
CD-ROM	CD or DVD R/W

2.8.3 Recommended Specifications of Grid

Item	Recommended specification
SID	100cm / 130cm / 150cm / 180cm
Ratio	8.1 / 10:1 / 12:1
Frequency	215 line/inch

- Check the recommended specifications by Vieworks first before buying the generator, workstation and grid.
- Vérifiez d'abord les spécifications recommandées par Vieworks avant d'acheter le générateur, le poste de travail et le reseau.

3. System Configuration

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

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

Detector Connection Methods

Diagram

System Configuration

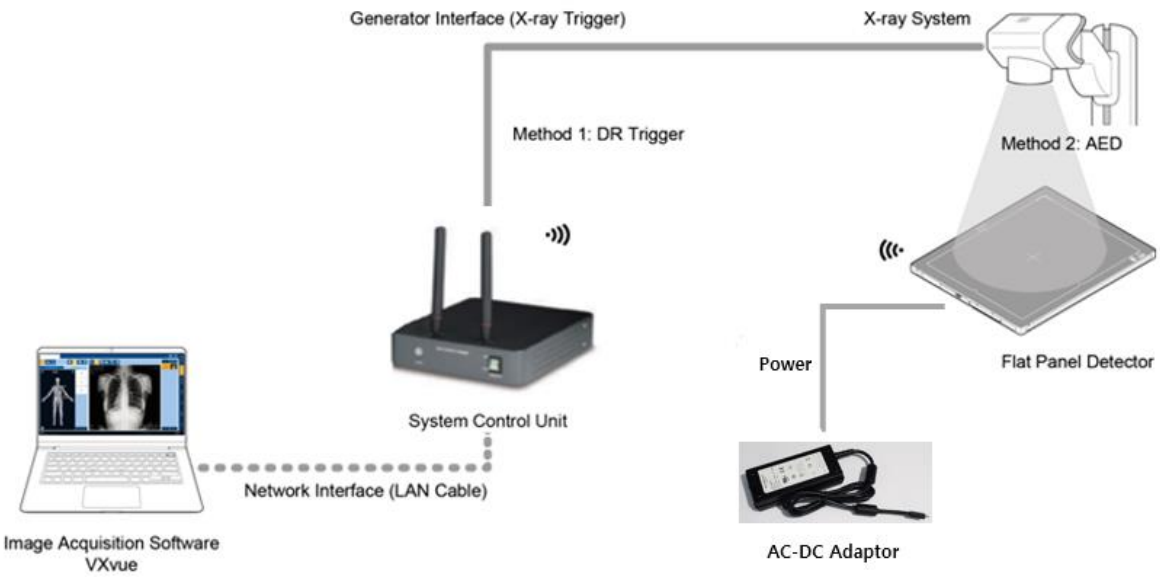
Generator Interface

Configuring DR Trigger Interface

3.1 Detector Connection Methods

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

3.1.1 Wireless Connection

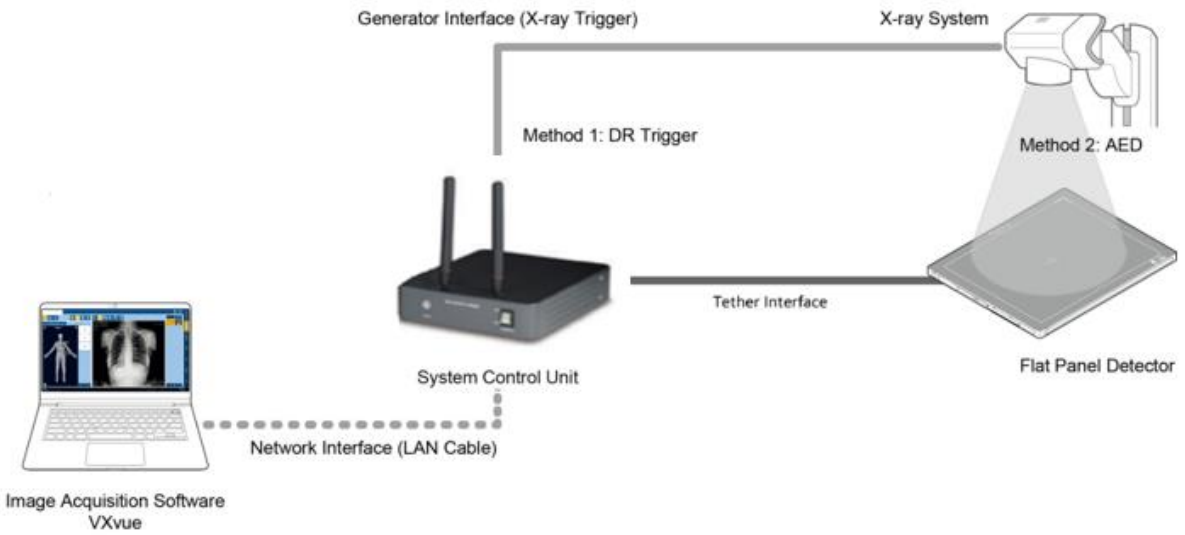


- The VIVIX-S VW Detector and PC (Workstation) connect wirelessly to transfer video and data to a PC.
- Using the SCU mini (FXRS-04A), you can use the DR Trigger as well as AED (Auto Exposure Detection) with the generator interface.
- Instead of using the SCU mini (FXRS-04A) as an AP, you can use an 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. However, if you connect an AC-DC adapter, the detector receives power from the adapter and the battery charges quickly.

- 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 plus facilement d'utiliser des appareils que la connexion filaire.
- Utilisez la connexion sans fil avec un ordinateur portable pour améliorer la mobilité

- Be sure to operate the wireless commnunication between the detector and SCU within a maximum of **8m**.
- Use of multiple WLAN devices within the same frequency band may interfere with each wireless communication and cause a decline in transmission speed.
- Do not cover or block the wireless module of the detector. Also, do not put any shielding materials between the detector and SCU. Otherwise, the transmission speed or operable distance may be reduced.
- Veillez à utiliser la communication sans fil entre le détecteur et le SCU dans un délai maximal de 8 m.
- L'utilisation de plusieurs périphériques WLAN dans la même bande de fréquence peut interférer avec chaque communication sans fil et provoquer une diminution de la vitesse de transmission.
- Ne couvrez pas et ne bloquez pas le module sans fil du détecteur. De même, ne placez aucun matériau de protection entre le détecteur et le SCU. Sinon, la vitesse de transmission ou la distance de fonctionnement peut être réduite.

3.1.2 Wired Connection

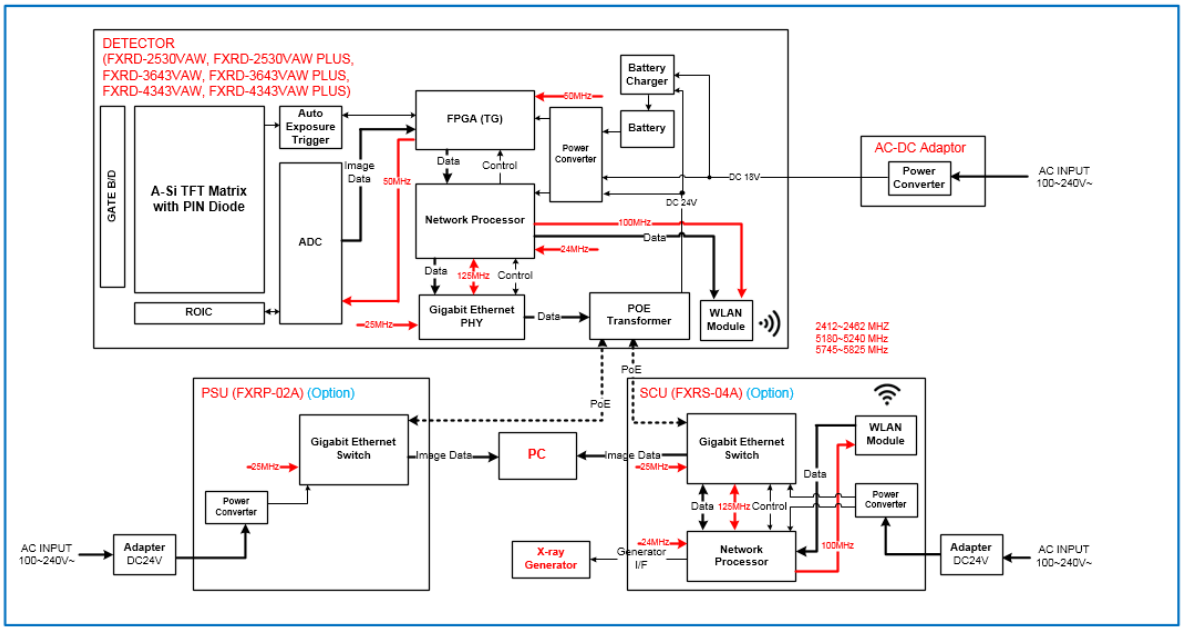


- The VIVIX-S VW detector is wired to the PC (Workstation) via the SCU and transmits image and data to the PC.
- Using the SCU mini (FXRS-04A), you can use the DR Trigger as well as AED (Auto Exposure Detection) with the generator interface.
- You can use SCU Lite (FXRP-02A) instead of the SCU mini (FXRS-04A). In this case, DR Trigger cannot be used.
- When the detector is wired, the battery charges while the detector is powered by the tether interface cable.

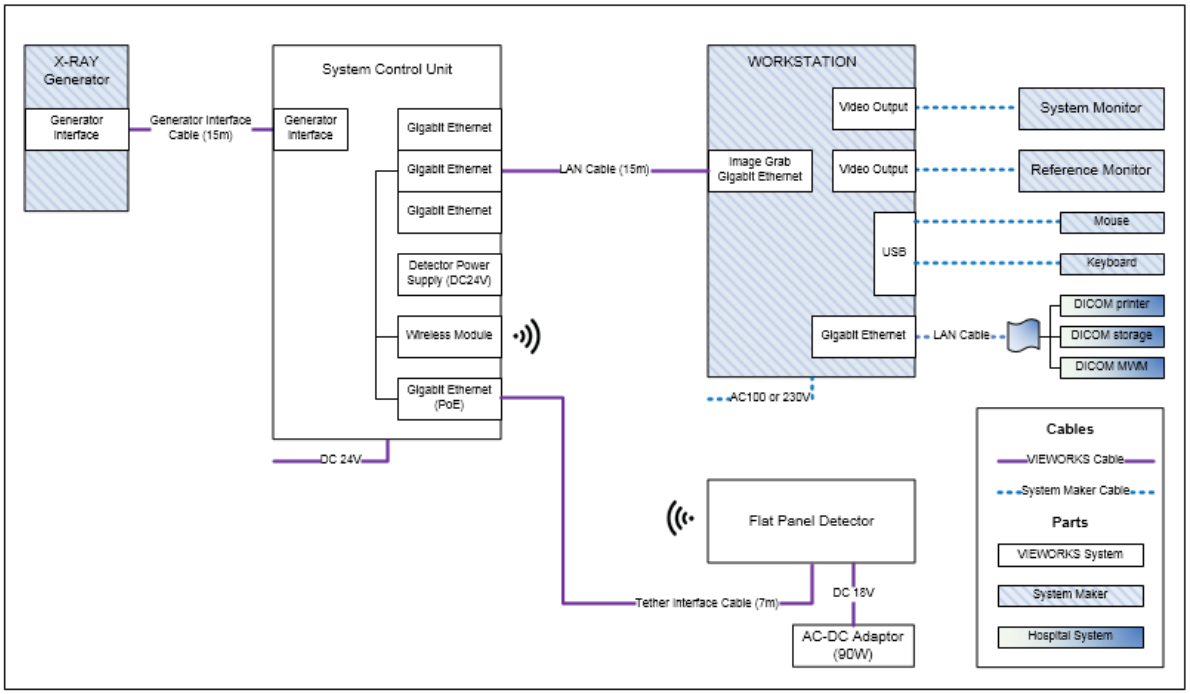
	• We recommend you the wired connection in the following cases. ▫ If the detector needs a contant power supply. ▫ When the detector is fixed to a bucky stand or a table. ▫ If you want data communication faster than wireless connection. • In a wired connection, wireless communication is disabled. • Nous vous recommandons la connexion filaire dans les cas suivants. ▫ Si le détecteur nécessite une alimentation continue. ▫ Lorsque le détecteur est fixé sur un support ou une table Bucky. ▫ Si vous souhaitez une communication de données plus rapide qu'une connexion sans fil. • Dans une connexion filaire, la communication sans fil est désactivée.

3.2 Diagram

3.2.1 Block Diagram



3.2.2 Wiring Diagram

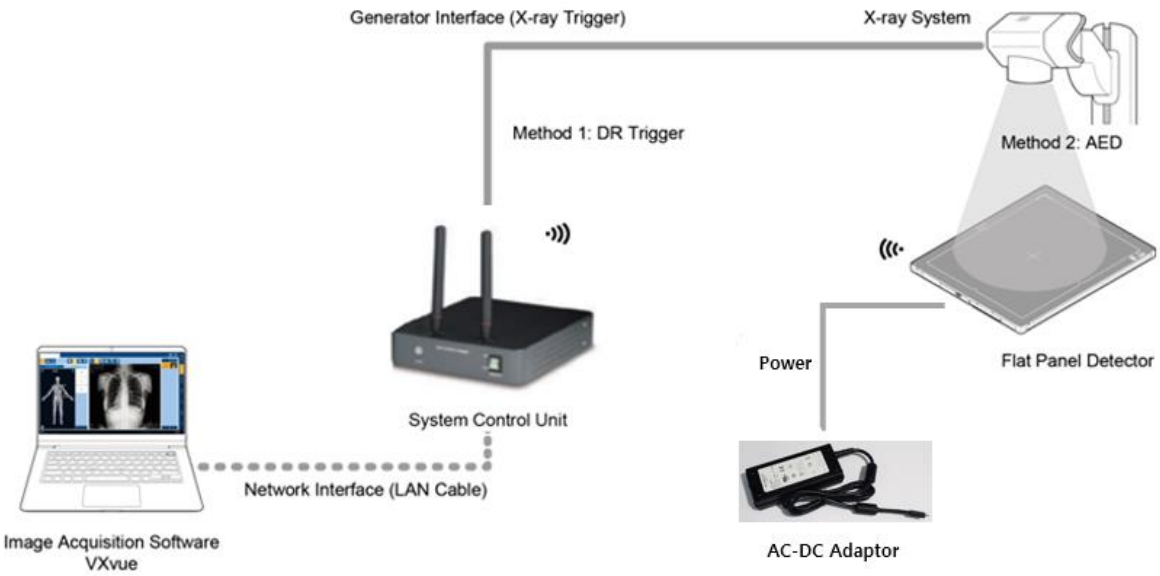


3.3 System Configuration

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

3.3.1 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 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. However, when you connect the AC-DC adapter to the detector, it receives power from the adapter and the battery charges quickly.

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

SCU mini & PC (Workstation)

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

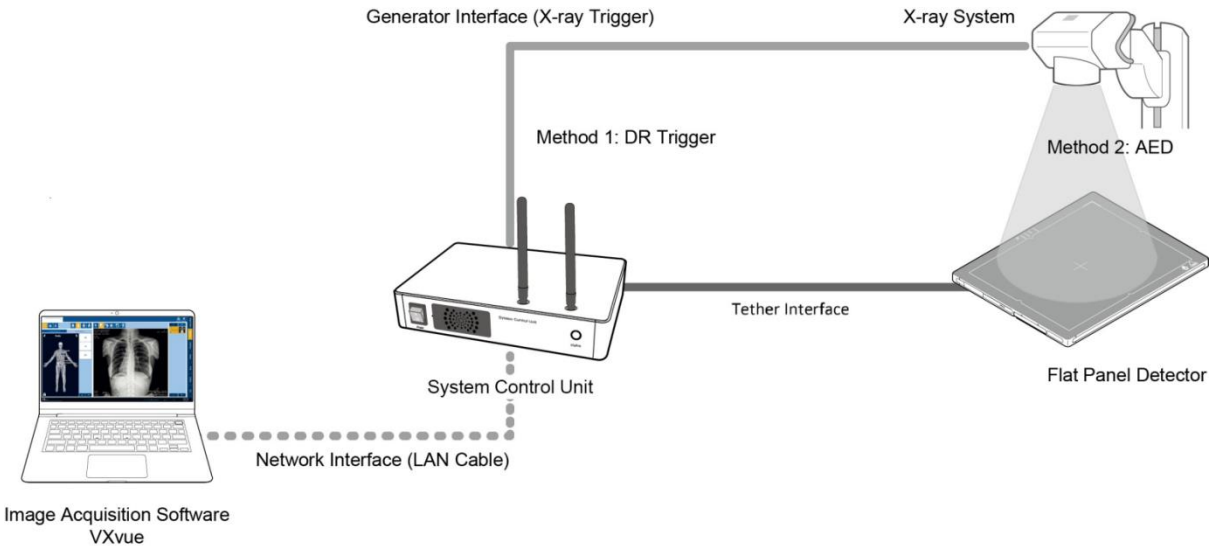
SCU mini & X-ray Generator

- SCU and the X-ray generator can be connected with a generator interface cable. (DR trigger mode)

- If you use the detector's AED mode as the generator interface, it is unnecessary to wire the SCU and the generator.
- Si vous utilisez le mode DAE (détection d'exposition automatique) du détecteur comme interface de générateur, il est inutile de câbler le SCU et le générateur.

3.3.2 Tether Interface Mode

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



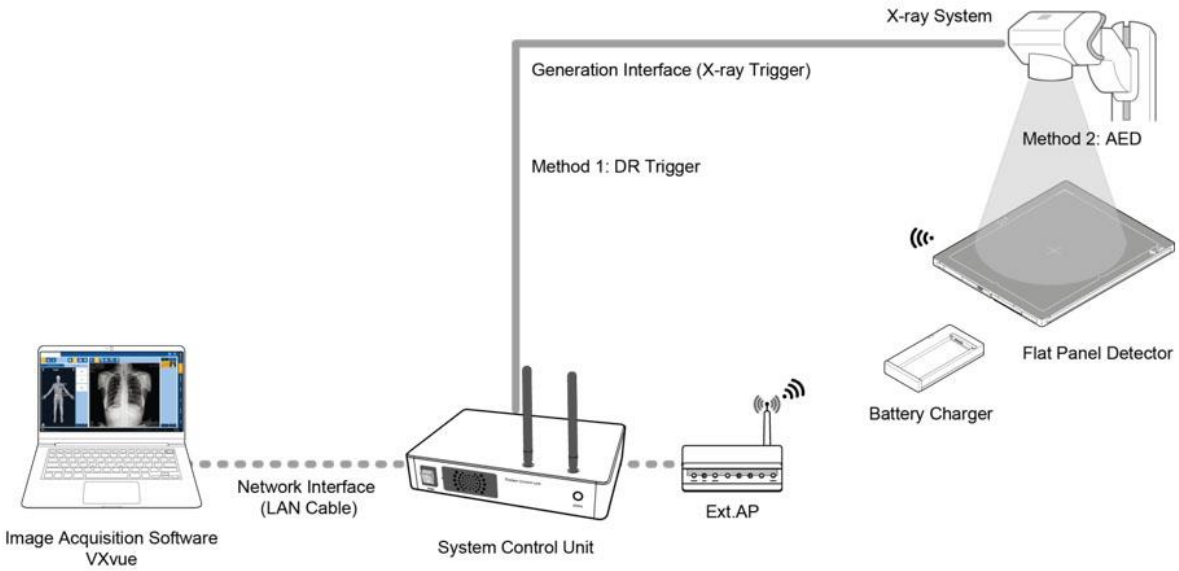
SCU & Detector

- SCU and the **VIVIX-S VW** detectors are connected with the tether interface cable.

- Other connection ways of the tether interface mode are the same as the AP mode.
- Les autres modes de connexion du mode interface Tether sont identiques à ceux du mode AP.

3.3.3 External AP Mode

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



External AP & SCU

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

External AP & Detector

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

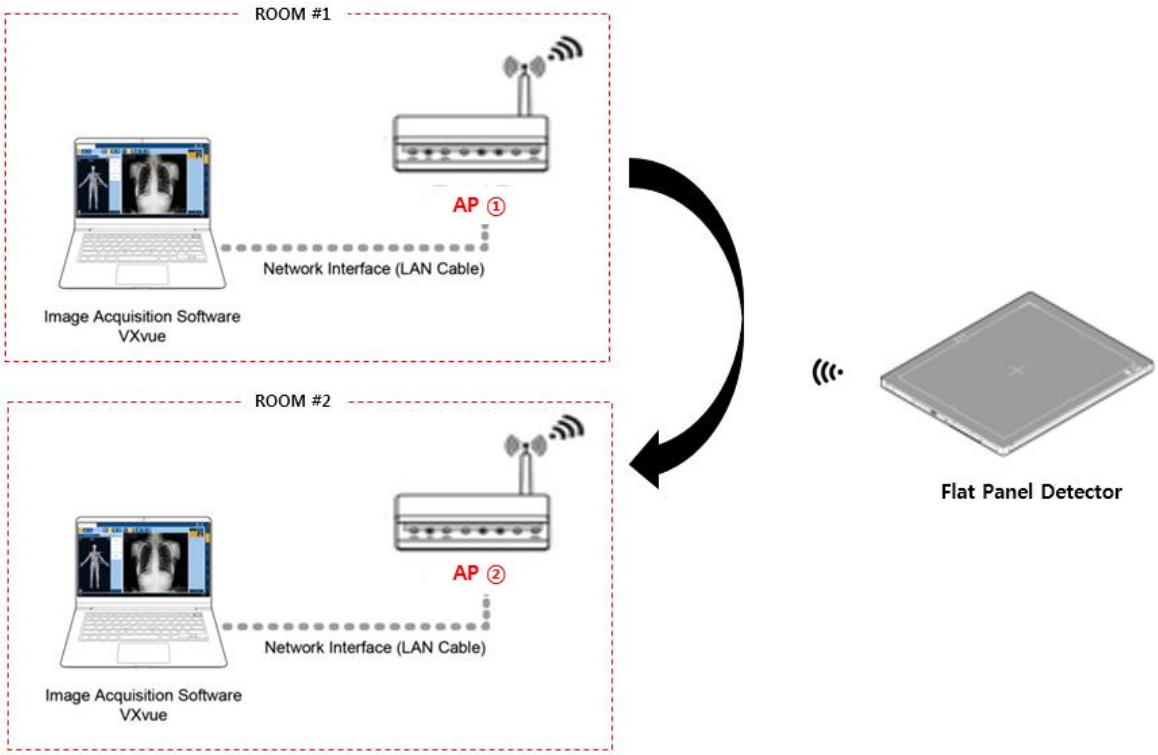
	• Other connection ways of the tether interface mode are same as the AP mode. • Les autres modes de connexion du mode interface Tether sont identiques à ceux du mode AP.

	• 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.

3.3.4 AP Switching

Using this function, you can conveniently change the external AP when the detector is STATION.

- Ex.) If you want to use one detector in both ROOM #1 and ROOM #2.



1 When the detector is in STATION, you can change the external AP by pressing the AP button for about 3 seconds.
   - That is, the detector changes to the same SSID and key as those of the external AP to be changed.
   - AP switching disconnects the existing AP and automatically changes to the AP with the largest signal strength among the list of registered APs. Therefore, the SSID and KEY of the AP to be used must be registered before switching the AP.

2 During AP switching, the OLED display shows Changing Settings, and you can check the changed settings after the switching.

	• Available only when the detector is in wireless state (without connecting a tether interface cable). • Refer to the VIVIX Setup Operation Manual for details on AP switching (e.g. how to register AP). • Disponible uniquement lorsque le détecteur est en mode sans fil (sans connecter de câble d'interface d'attache). • Reportez-vous au Manuel d'utilisation de VIVIX Setup pour plus d'informations sur la commutation AP. (par exemple, comment enregistrer AP.)

3.3.5 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 'Changing Settings'. 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 VIVIX Setup.

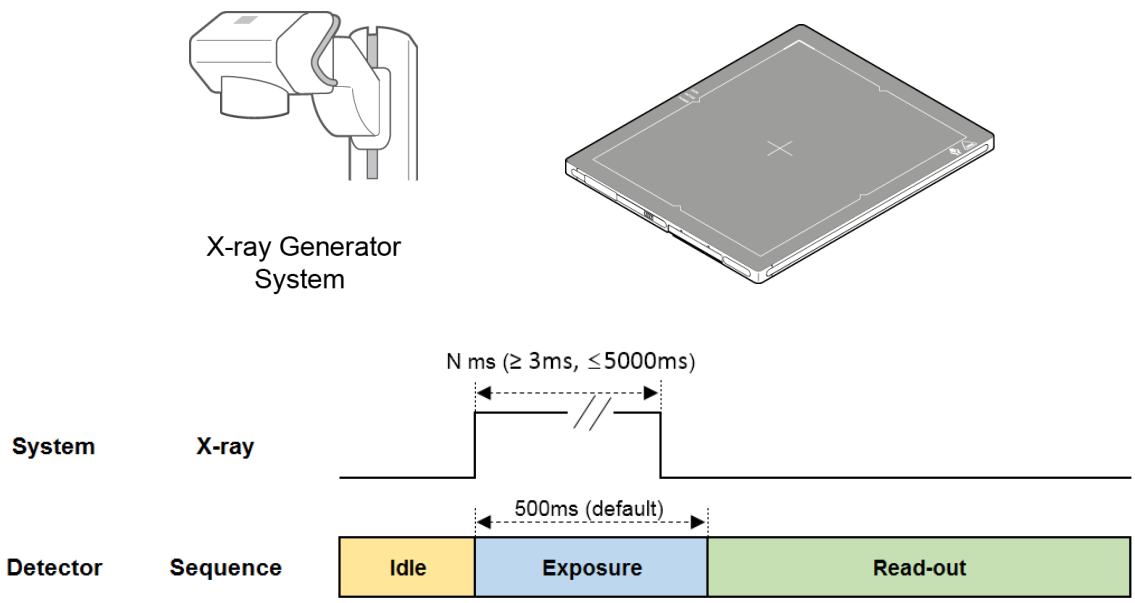
3.4 Generator Interface

VIVIX-S VW detectors provide **AED** interface and **DR 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 with a generator interface cable. • DR Trigger interface is not supported in case you connect SCU Lite (FXRP-02A) with the X-ray generator.

3.4.1 AED (Auto Exposure Detection) Interface

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



Signal processing steps

1 X-ray generator exposes X-rays.

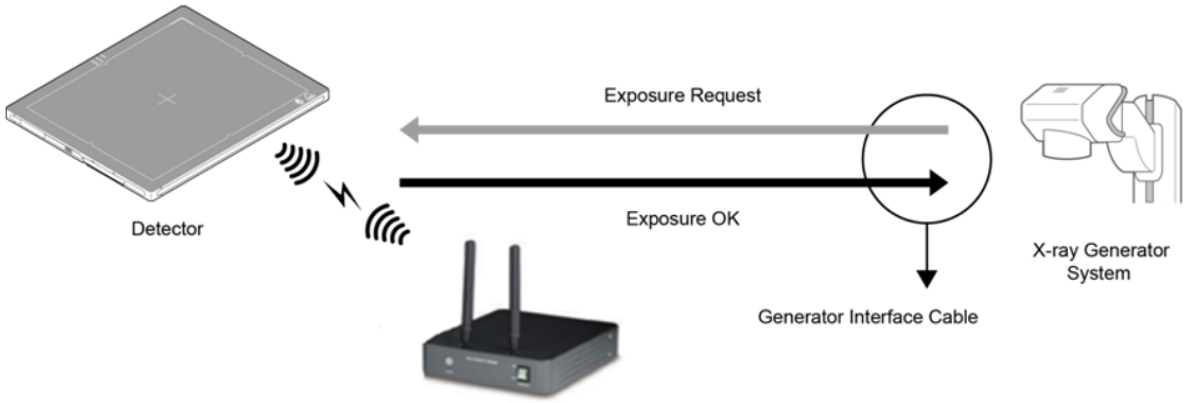
2 The detector acquires the image and sends the image data.

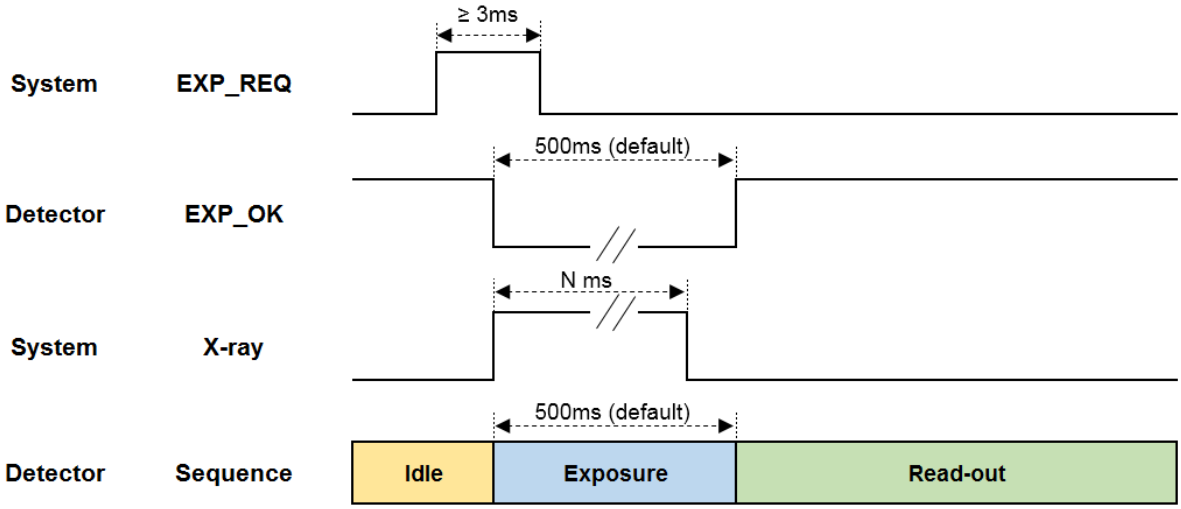
	• The default X-ray exposure time set in the detector is 500ms and can be changed by the user's settings. • La durée d'exposition aux rayons X définie par défaut dans le détecteur est de 500 ms et peut être modifiée à l'aide des paramètres de l'utilisateur.

- 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 or more and 5000ms or less. Otherwise, the image may not be obtained.
- Make sure to follow the operating environmental condition (Temp: 0℃ ~ +40℃).
- 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.
- N ms, qui correspond au temps pendant lequel les rayons X doivent être exposés, doit être plus court que le temps d'exposition défini dans le détecteur. Sinon, des images anormales peuvent être obtenues.
- N ms, qui correspond au temps pendant lequel la radiographie doit être exposée, doit être de 3 ms ou plus et de 5000 ms ou moins. Sinon, l'image pourrait ne pas être obtenue.
- Assurez-vous de respecter les conditions environnementales de fonctionnement (Temp: 0℃ ~ + 40℃).
- Ne pas donner d'impact au produit. Si elle reçoit de fortes secousses, des images indésirables peuvent être acquises sans exposition aux rayons X en raison du dysfonctionnement du capteur de DAE.
- Vous risquez de ne pas acquérir d'images ou d'artefacts horizontaux susceptibles de se produire en fonction de l'environnement externe, tels que les conditions d'exposition, l'épaisseur de l'objet ou l'utilisation de la grille.
- Lorsque vous définissez 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 ne pouvez pas acquérir une image.

3.4.2 DR Trigger Interface

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





Signal Processing Steps

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

- EXP_REQ is a shooting request signal sent by the X-ray generator to the detector.
- EXP_OK is a shooting ready signal sent by the detector to the X-ray generator.
- The default X-ray expousre time set in the detector is 500ms and can be changed by the user's settings.
- EXP_REQ est un signal de demande de prise de vue envoyé par le générateur de rayons X au détecteur.

	• EXP_OK est un signal de prise de vue prêt envoyé par le détecteur au générateur de rayons X. • Le temps d'exposition aux rayons X défini par défaut dans le détecteur est de 500 ms et peut être modifié à l'aide des 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 more. Otherwise, the image may not obtained. • N ms, qui correspond au temps pendant lequel les rayons X doivent être exposés, doit être plus court que le temps d'exposition défini dans le détecteur. Sinon, des images anormales peuvent être obtenues. • EXP_REQ devrait être de 3 ms ou plus. Sinon, l'image pourrait ne pas être obtenue.

3.5 Configuring DR Trigger Interface

To configure the **DR Trigger** interface, SCU mini (FXRS-04A) and the generator should be connected with a generator interface cable. Connect the one end of generator interface cable to **EXT_INF** port of SCU, and then connect the other end to the generator.

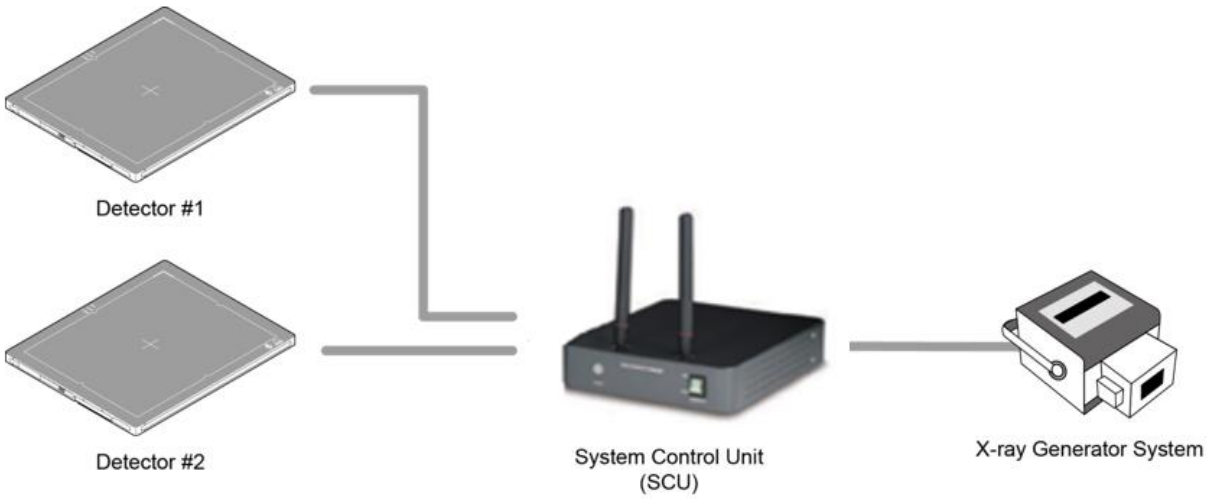
- The engineer who understands about the X-ray generator device and interface technology well should be in charge of the connection between the detector and generator interface.
- If the detector and the X-ray generator interface are not properly connected when the AED is not used, the detector will not take images.
- L'ingénieur qui comprend bien le dispositif générateur de rayons X et la technologie d'interface devrait être en charge de la connexion entre le détecteur et l'interface générateur.
- Si le détecteur et l'interface du générateur de rayons X ne sont pas correctement connectés lorsque le DAE (détection automatique de l'exposition) n'est pas utilisé, le détecteur ne prendra pas d'images ages.

3.5.1 Trigger Interface Way

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

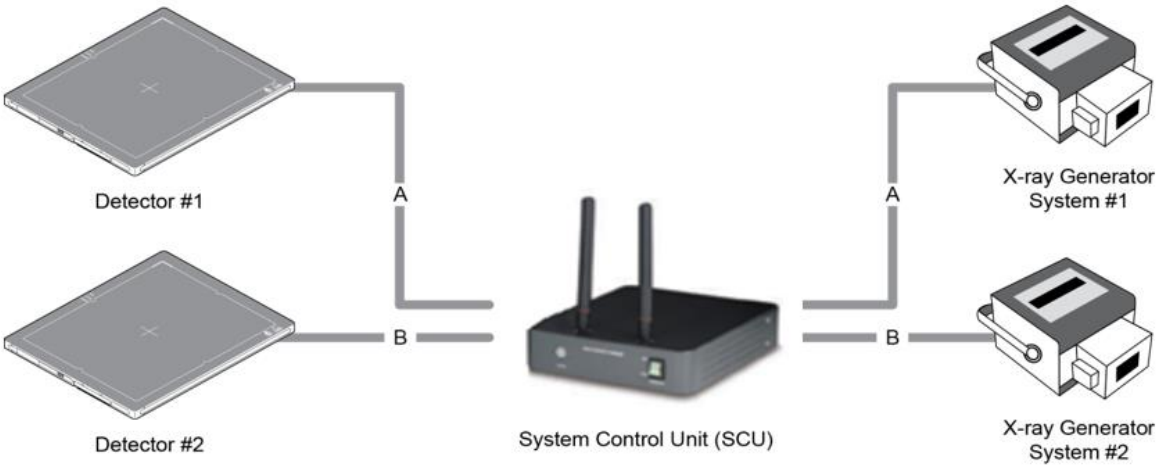
Trigger Interface	Description
Packet Trigger	Handles exposure signal by exchanging packet.
Line Trigger	Handles exposure signal by exchanging electrical signal.

3.5.2 Packet Trigger



- Multipe detectors share one generator signal together.
- Connect a generator interface cable to one of the pin groups.
- The generator tramsmits and receives signal with the one selected detector for taking images.
- Les multi-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 la prise d'images.

3.5.3 Line Trigger

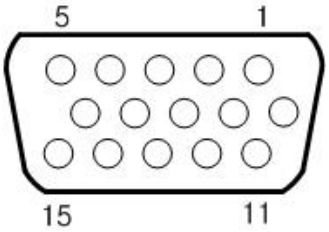


- Each detector shares a signal by being connected with generators separately.
- Up to two (2) X-ray generators can be connected to SCU.
- The connection of each detector and generator can be configured from **VIVIX Setup**.
- Chaque détecteur partage un signal en étant connecté à des générateurs séparément.
- Jusqu'à deux (2) générateurs de rayons X peuvent être connectés au SCU.
- 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 understand the generator device and interface technology should be in charge of interface work between SCU and the generator.
- Vous devez comprendre un détecteur et un générateur de rayons X pour une exposition correcte. Sinon, les rayons X peuvent être exposés au détecteur à un endroit différent.
- L'ingénieur qui comprend le 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.

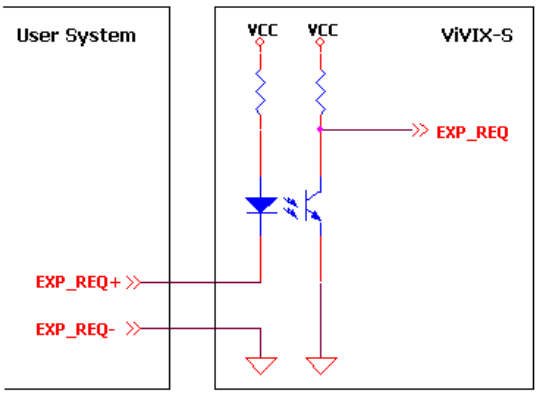
- There are **Contact** type (OPEN/ CLOSE) and **TTL** type (ON/ OFF) on the signal in/output pin.
- TTL type information
  - ON : VCC
  - OFF : GND
  - Current: 5 mA ~ 10 mA
  - Voltage: 12 V ~ 24 V
- Il existe un type de contact (OPEN / CLOSE) et un type TTL (ON / OFF) sur la broche signal entrée /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

	• Informations de type TTL ▫ ON: VCC ▫ OFF: GND ▫ Courant: 5 mA ~ 10 ▫ Tension: 12 V ~ 24 V

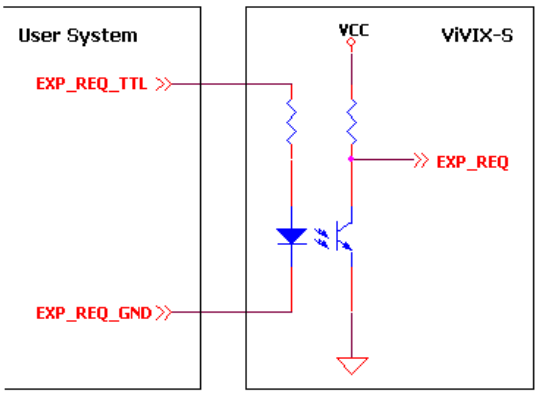
	• When you plan to add interface using a user-defined pin, contact to the person in charge of Vieworks. • Lorsque vous envisagez d'ajouter une interface à l'aide d'une épingle définie par l'utilisateur, contactez le responsable de Vieworks.

3.5.5 Input / Output Circuit

Exposure Request Input Circuit (EXP_REQ)

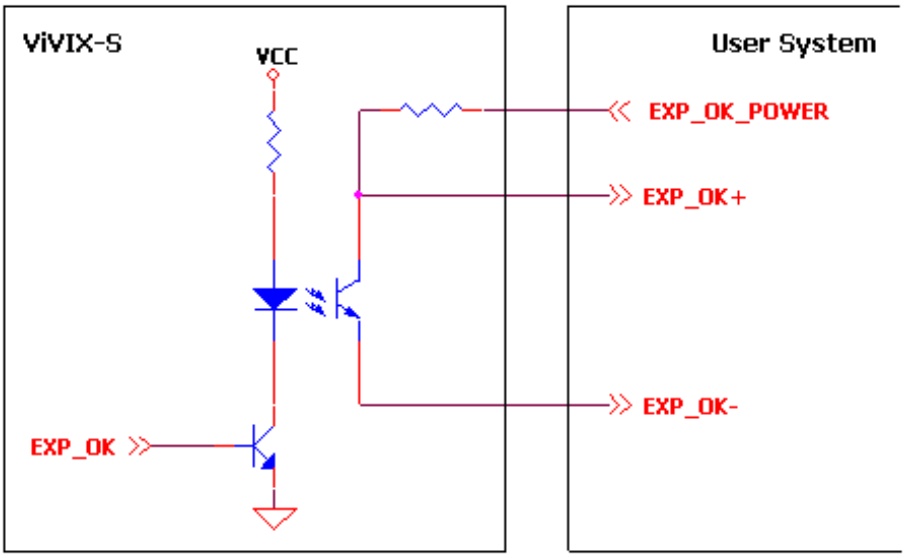


<Contact Type>



<TTL Type>

Exposure Respond Output Circuit (EXP_OK)



4. Settings

This section gives information about the way of installation, setting, and diagnosis to use a detector with SCU.

Product Installation

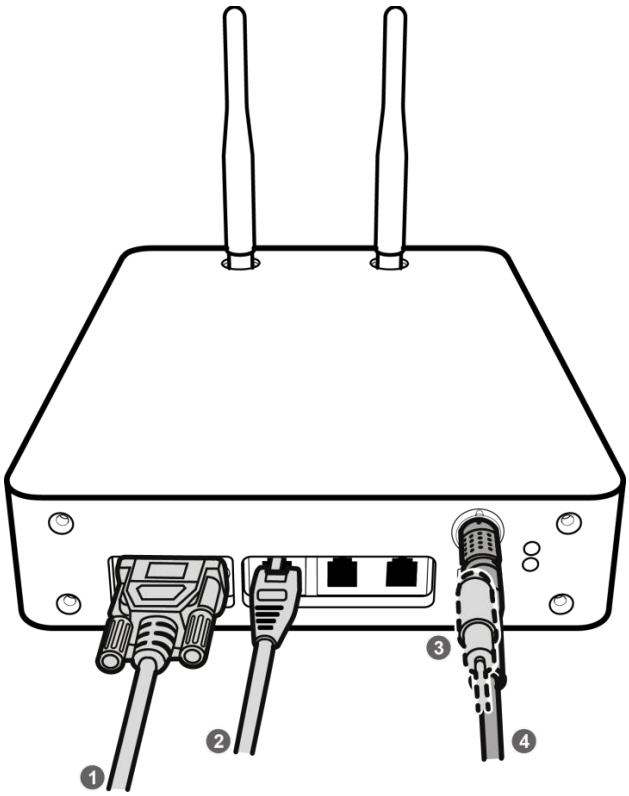
Device Setting

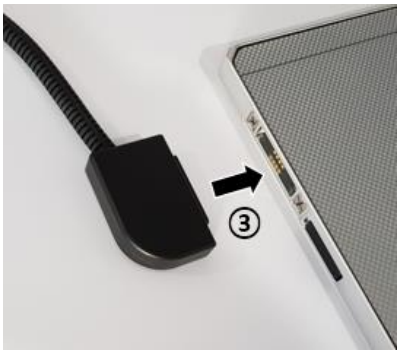
Diagnosis of Devices

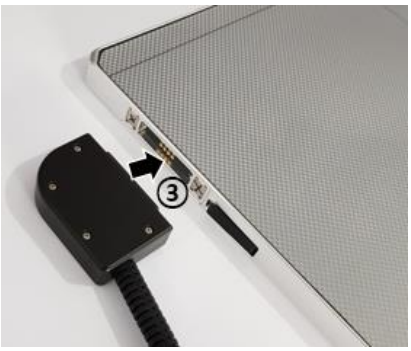
4.1 Product Installation

- 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 ne doit être connecté qu'à une prise de terre de protection.

4.1.1 Connecting SCU mini (FXRS-04A)







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 pour générateur n'est pas nécessaire car le détecteur fonctionne en détectant automatiquement les rayons X.

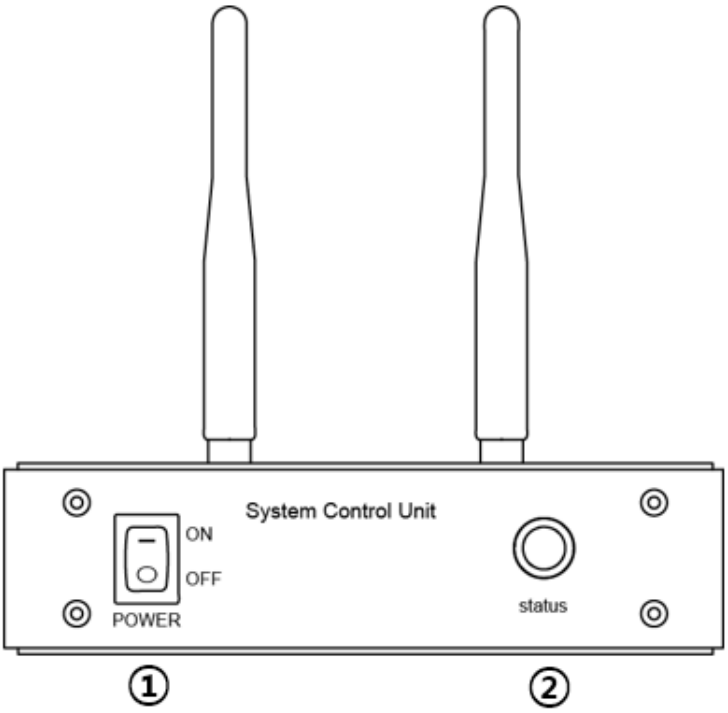
2 Connect one end of the LAN cable to one of the LAN ports of SCU mini, and the other to the LAN Card Connector of workstation assigned for data transfer. Stand the antenna of SCU mini upright.

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

	• If you use the wireless communication method, a tether interface cable is not needed as the image is transmitted wirelessly. • Si vous utilisez la méthode de communication sans fil, un câble d'interface d'attache n'est pas nécessaire car l'image est transmise sans fil.

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

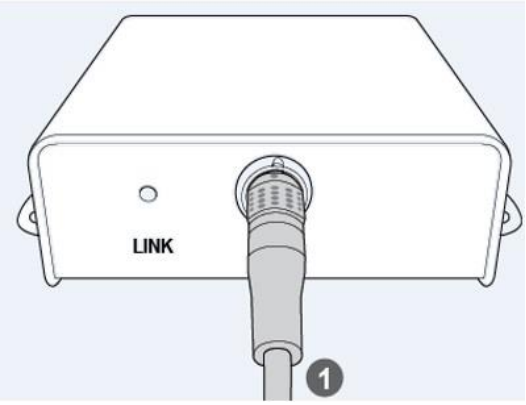
4.1.2 Booting SCU mini (FXRS-04A)

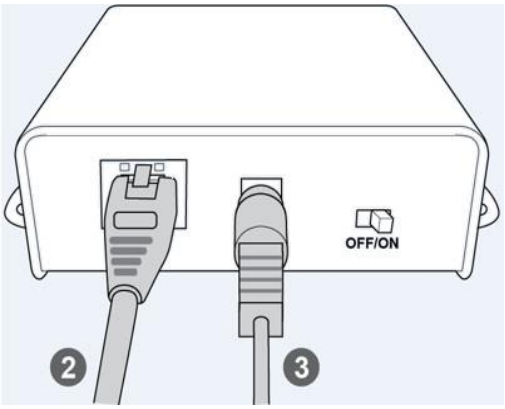


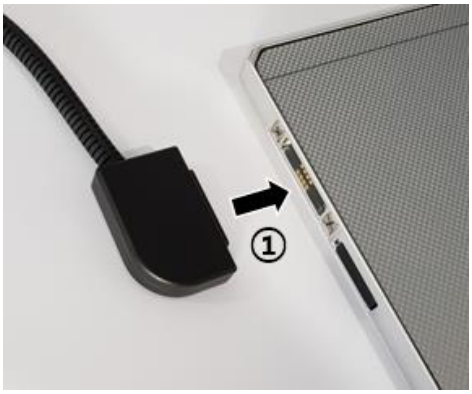
1 Turn on the power switch on the front of the SCU mini. (ON).
2 Make sure the status LED is lit green.

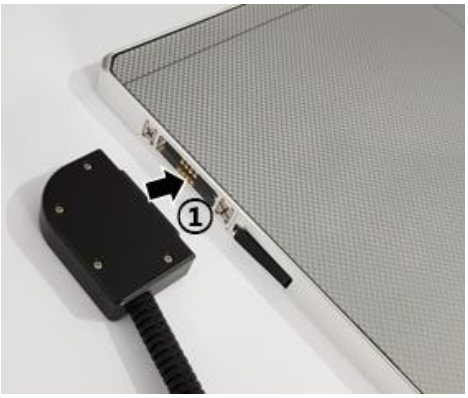
- When the status LED is blinking green, it means power is applied and SCU is booting up.
- When the status LED is lit green, it means the SCU boot is complete.
- Lorsque le voyant d'état clignote en vert, cela signifie que l'alimentation est appliquée et que le SCU est en cours de démarrage.
- Lorsque le voyant d'état est allumé en vert, cela signifie que le démarrage du SCU est terminé.

4.1.3 Connecting SCU Lite (FXRP-02A)





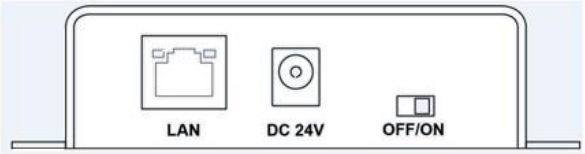


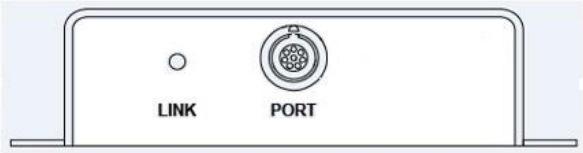


1 Connect one end of the tether interface cable to the detector and connect the other end to **PoE port** of SCU Lite.
   - The tether interface cable can be connected to the detector in any direction.
2 Connect one end of the LAN cable to the LAN port on the SCU Lite and the other end to the LAN port for data transfer on the workstation.
3 Connect the AC-DC power adaptor to the power input port of SCU Lite.

- When the tether interface cable is connected to the detector, it is fixed by a magnet of the tether interface cable and the detector.
- Lorsque le câble d'interface d'attache est connecté au détecteur, il est fixé par un aimant du câble d'interface d'attache et du détecteur.

4.1.4 Booting Up SCU Lite (FXRP-02A)





1 Turn on the power switch at rear side of SCU Lite (ON).
2 If you connect a detector to SCU Lite by wire, check if the LINK LED of SCU Lite lights up green.

- When the LINK LED lights up green, the detector and SCU are wired at 1Gbps.
- When the LINK LED lights up yellow, the detector and SCU are wired at 100 Mbps.
- Lorsque la DEL LINK est allumée en vert, le détecteur et le SCU sont câblés à 1 Gbps.
- Lorsque la DEL LINK est allumée en jaune, le détecteur et le SCU sont câblés à 100 Mbps.

4.1.5 Booting up the Detector

1 Press the power button on the detector for about 1 second.
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 or an AC-DC adapter is attached.
- 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 fini de démarrer.
- Si vous maintenez le bouton d'alimentation enfoncé pendant environ 3 secondes, le voyant d'alimentation et l'écran OLED s'éteignent, puis le système est mis hors tension. Toutefois, la batterie peut être chargée lorsque le SCU est alimenté via un câble d'interface d'attache ou lorsqu'un adaptateur CA-CC est connecté.

4.2 Device Setting

4.2.1 Software Installation

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

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

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

- It is not necessary to install **VIVIX Device Driver** and **VIVIX Setup** separately in case of installing the **VXvue** program made by Vieworks.
- Il n'est pas nécessaire d'installer VIVIX Device Driver et VIVIX Setup séparément pour installer le programme VXvue créé par Vieworks.

3 Configure environment for the workstation.

4.2.2 Setting Detector and SCU

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

- The device setting should be done by an engineer who understands the **VIVIX Setup**, Windows system, wired/wireless network and the related technique. If not, an error could occur while operating the detector, or the image quality could be affected.
- Le réglage du périphérique doit être effectué par un ingénieur comprenant la configuration VIVIX, le système Windows, le réseau câblé / sans fil et la technique associée. Sinon, une erreur pourrait survenir lors de l'utilisation du détecteur ou la qualité de l'image pourrait en être affectée.

4.3 Diagnosis of Devices

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

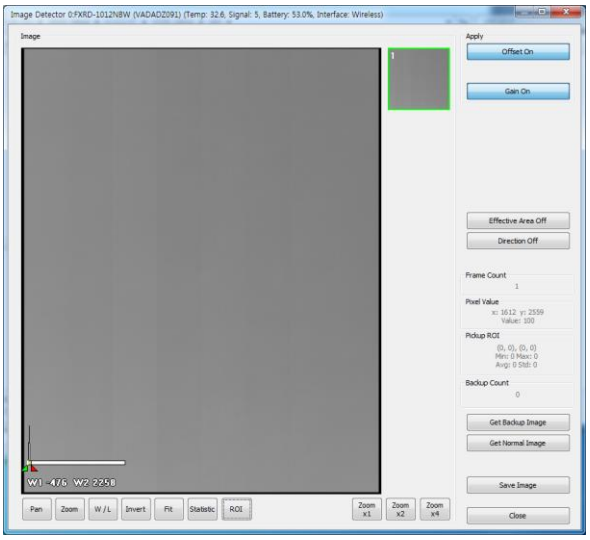
Diagnosis Items

Items	Description
Image	Diagnoses the acquired images.
Battery Pack	Diagnoses the condition of a battery pack.
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 de nouveau l'étalonnage si un problème est détecté lors du diagnostic. Contactez le responsable du service si le problème n'est pas résolu.

4.3.1 Diagnosing Images

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 VIVIX Setup pour 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 étalonnez à nouveau le détecteur. Contactez le responsable de Vieworks si le problème est causé par les performances d'un détecteur.

4.3.2 Diagnosing Battery Pack

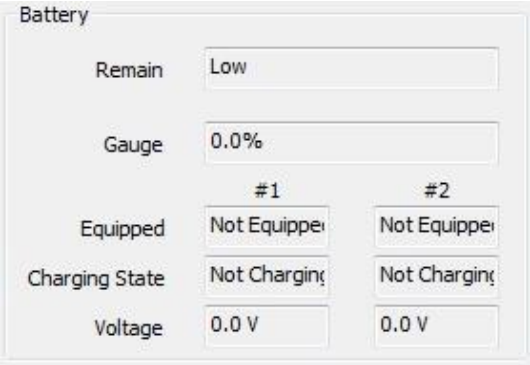
Check from OLED display of the detector

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

Icon	Description
	No battery pack
	Charging (Capacity changes depending on remaining charge.)
	Charging complete or discharged. (Capacity changes depending on remaining charge.)

Check from VIVIX Setup

1 Execute **VIVIX Setup** and go to the **Information** tab of the **Diagnosis** 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 que la batterie reste de VXvue ou de VIVIX SDK.
- Reportez-vous au Manuel d'utilisation de VIVIX Setup 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. • Parce qu'une batterie est un consommable dont les performances diminuent avec le temps, assurez-vous de vérifier sa durée de vie lors de son utilisation. Si une batterie rencontre des problèmes, 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 vous avertit que la batterie est faible et le détecteur s'éteindra automatiquement après la consommation de la batterie pendant une période donnée. Par conséquent, il est recommandé de changer la pile 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.

Category	Item	Icon	Description
Wireless	AP		Operates in AP Mode
	STATION	R1	Identifier of external AP
			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)
Wired	Tether Interface		Link speed: 1Gbps

			Link speed: 100Mbps
Operating Status	**Changing Settings**		Changing communication settings

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 SSID and KEY important for wireless connection.

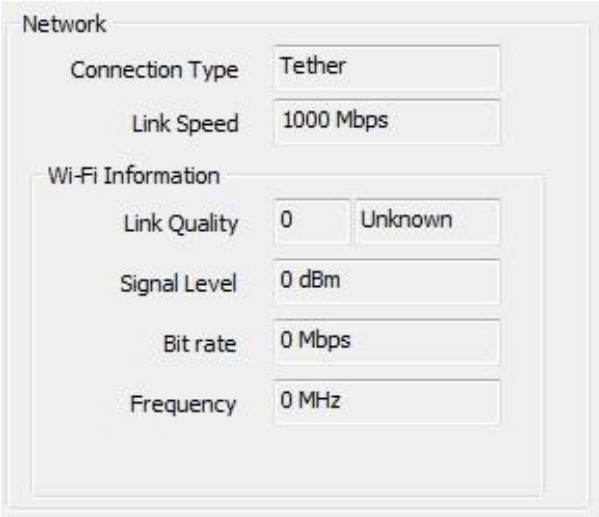
Category	Item	Icon	Description
Communication Status	**Identifier of wireless connection**	VVVVVVVVVV...	Displays SSID of the detector's current state (AP or STATION)
		000.000.000.000	Displays KEY of the detector's current state (AP or STATION)

Wired Communication Diagnosis

1 Connect the detector with a cable.

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

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

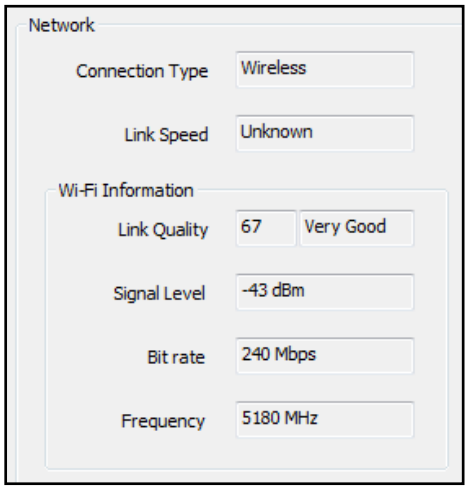


Wireless Communication Diagnosis

1 Connect the detector wirelessly.

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

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 à partir de VXvue ou de VIVIX SDK.
- Reportez-vous au Manuel d'utilisation de VIVIX Setup pour 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 puissance 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.
- Si vous utilisez le 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 les images.

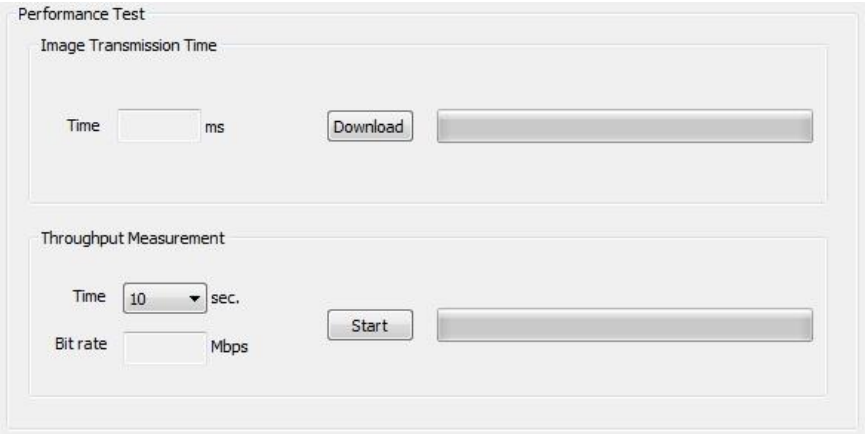
	• Assurez-vous de vérifier la communication sans fil environnante pour éviter les interférences de communication. Si le module de communication sans fil du détecteur rencontre des problèmes, contactez le technicien de maintenance de Vieworks

4.3.4 Diagnosing Communication Speed

1 Execute **VIVIX Setup** and go to the **Maintenance** tab of the **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 VIVIX Setup pour 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 s'il y a un problème de vitesse de communication. Contactez le responsable du service si le problème concerne le module de communication d'un détecteur et du SCU.

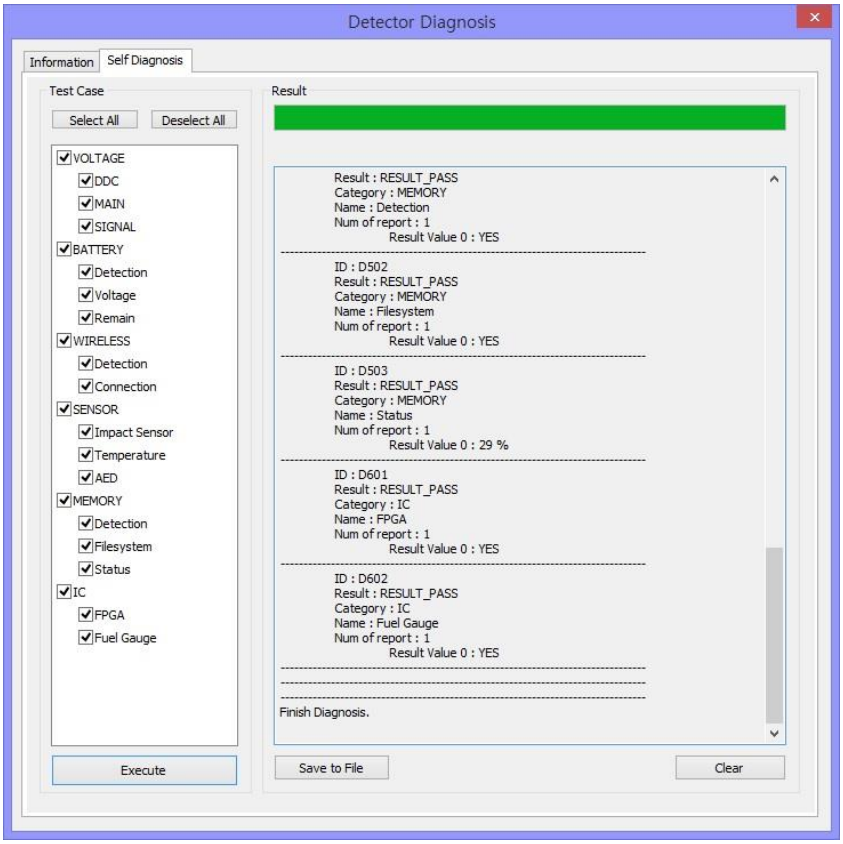
4.3.5 Self-Diagnosis

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

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

3 Click on the **Execute Test** 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 **Save to File** pour enregistrer le résultat d'un diagnostic sous forme de fichier et contactez le service d'assistance si un problème est détecté.

Self-diagnosis items of detector and measures

Voltage

Item	Form	Expected problem	Measures
SOURCE	Decision	Problem with input power	Replace the battery pack.
			Replace the tether interface cable.
			Replace AC-DC adapter.
MAIN	Decision	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 ciruit is connected to a battery pack.	Contact a service engineer.
Voltage	Information	N/A	N/A
Remain	Information	N/A	N/A

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 eingineer.

Wireless

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

Memory

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

IC

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

5. Maintenance

This section gives information about maintenance of the product.

Product Initialization

Detector Power Save Function

How to Replace the Battery Pack

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	5㎓
Country	KR
Band	40㎒
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 **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	5㎓
Country	KR
Band	40㎒
Channel	+36
SSID	vivix_ap
Key	1234567890
Image Acquisition	
Exposure Mode	AED
Auto Offset Refresh Setting	
Use offset refresh	Uncheck
Time Interval	30Min
Temperature Interval	3℃
Number of shot	5
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	5㎓
Country	KR
Band	40㎒
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 traitez 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 or from the AC-DC adapter.
- 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 d'attache ou par l'adaptateur CA / CC.

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 Manaul** for the detailed information about the power save mode.

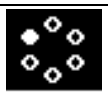
Entry Condition of Power Save Mode

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	Desciription
Sleep		Enter sleep mode
Changing Settings		Canceling 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.

5.3 How to Replace the Battery Pack

The battery pack is built into the detector. FXRD-3643VAW / FXRD-3643VAW PLUS / FXRD-4343VAW / FXRD-4343VAW PLUS can install up to two battery packs, and FXRD-2530VAW / FXRD-2530VAW PLUS can install only one battery pack.

	• The battery pack must be replaced by a service engineer licensed or certified by Vieworks. • La batterie doit être remplacée par un technicien de maintenance agréé ou certifié par Vieworks.

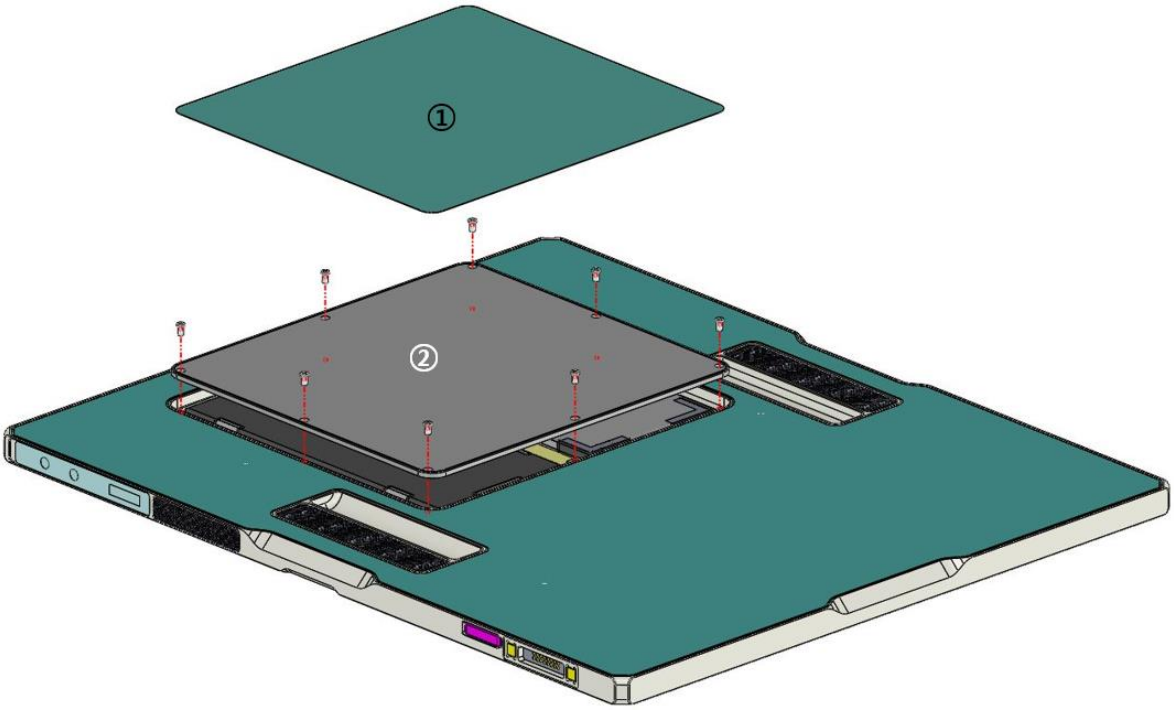
	• Battery packs lose capacity over time. ▫ The battery pack can be replaced at the end of its life. • The life of a battery pack is the number of charge and discharge cycles until it reaches 80% or less of its initial capacity (nominal capacity). • The battery pack used for VIVIX-S VW detector has a service life of approximately 800 times. (One time standard: Fully charged and then fully discharged) • Les batteries perdent de leur capacité avec le temps. ▫ La batterie peut être remplacée en fin de vie. • La durée de vie d'un bloc batterie est le nombre de cycles de charge et de décharge jusqu'à ce qu'il atteigne 80% ou moins de sa capacité initiale (capacité nominale). • La batterie utilisée pour le détecteur VIVIX-S VW a une durée de vie d'environ 800 fois. (Norme ponctuelle: complètement chargée puis complètement déchargée.)

5.3.1 Replacing the Battery of FXRD-3643VAW / FXRD-3643VAW PLUS / FXRD-4343VAW / FXRD-4343VAW PLUS

How to remove the battery pack

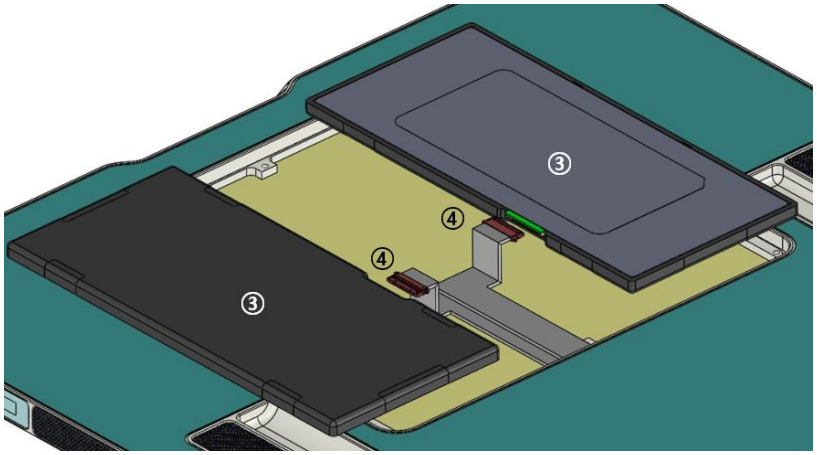
1 Remove the deco sheet attached to the battery pack cover.

2 Loosen the bolts that secure the battery pack cover using a hexagon wrench, and then open the battery pack cover.



3 Take the battery pack out of the detector.

4 Disconnect the cable connected to the battery pack.



⚠	• Before removing the battery pack from the detector, turn off the detector. 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. • Disconnect wired power before removing the battery pack from the detector. If a tether interface cable or AC-DC adapter is attached, remove it from the detector. • Avant de retirer la batterie du détecteur, éteignez le détecteur. Si vous maintenez le bouton d'alimentation enfoncé pendant environ 3 secondes, le voyant d'alimentation et l'écran OLED s'éteignent, puis le système est mis hors tension. • Déconnectez l'alimentation câblée avant de retirer la batterie du détecteur. Si un câble d'interface d'attache ou un adaptateur CA-CC est connecté, retirez-le du détecteur.

How to attach the battery pack

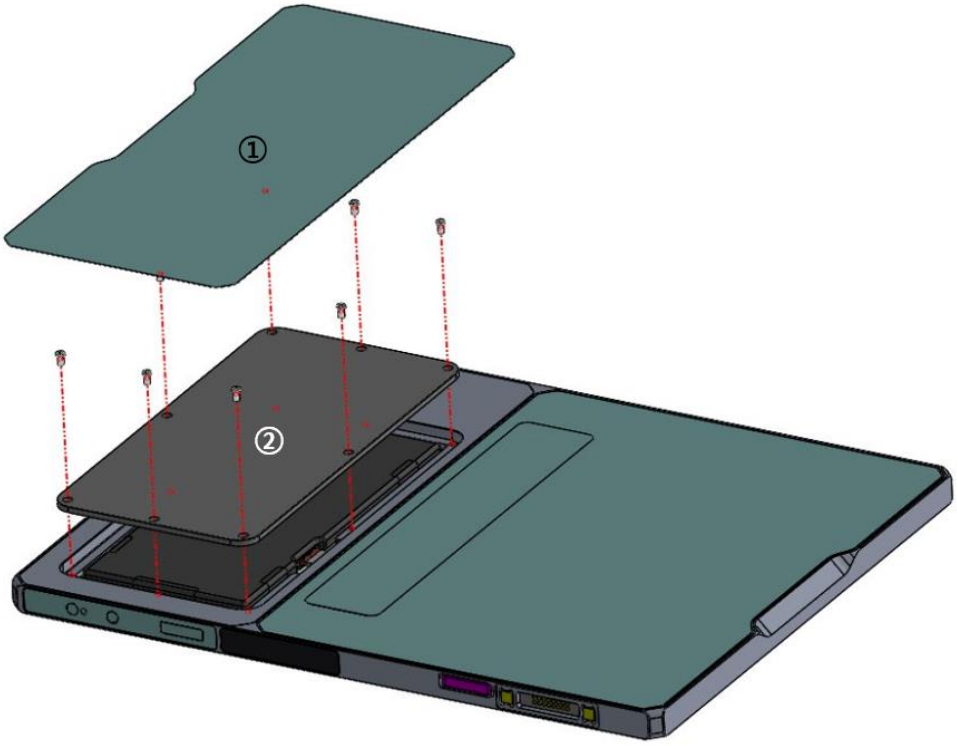
1 Connect the battery pack to the cable.
2 Put the battery pack into the detector.
3 Close the battery pack cover and use a hex wrench to tighten the bolts that secure the battery pack.
4 Attach the new deco sheet to the battery pack cover.

ℹ	• Make sure the battery pack is installed correctly. • The installed status and remaining charge of the battery pack can be checked on the OLED display and the VIVIX Setup program. • Assurez-vous que la batterie est correctement installée. • L'état installé et la charge restante de la batterie peuvent être vérifiés sur l'écran OLED et le programme d'installation VIVIX.

5.3.2 Replacing the Battery of FXRD-2530VAW / FXRD-2530VAW PLUS

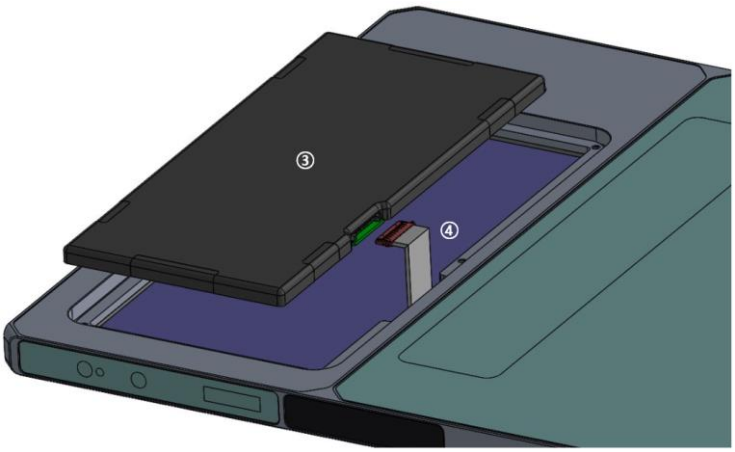
1 Remove the deco sheet attached to the battery pack cover.

2 Loosen the bolts that secure the battery pack cover using a hexagon wrench, and then open the battery pack cover.



3 Take the battery pack out of the detector.

4 Disconnect the cable connected to the battery pack.



How to attach the battery pack

1 Connect the battery pack to the cable.

2 Put the battery pack into the detector.

3 Close the battery pack cover and use a hex wrench to tighten the bolts that secure the battery pack.

4 Attach the new deco sheet to the battery pack cover.

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 technicien de maintenance agréé par Vieworks. Si une personne non qualifiée effectue un dépannage sur le système entraînant une détérioration du détecteur, du logiciel ou du matériel, Vieworks ou son représentant n'est pas responsable de la réparation du détecteur, quelle que soit la garantie restante. Pour plus d'informations, reportez-vous aux sections <7.1 Informations sur la maintenance> 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 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. 7 Replace SCU (or external AP). 8 Replace the detector.

6.1.5 There is no problem in communication connection, 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 calibaration data. 3 Set the exposure time to be longer than the X-ray exposure time. 4 Check the operating environment (temperature, humidity, shock, vibration, X-ray energy range). 5 Replace the detector.

6.1.7 Battery Pack or Installation Part of Battery is Getting Hot

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.

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 Lifetime

The estimated product lifetime may be 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, make adjustments, or replace consumables.
There may be cases where overhaul is recommended depending on the conditions. Contact your sales representative or distributor for regular inspections or maintenance.

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.

- Model name
  - **FXRD-3643VAW / FXRD-3643VAW PLUS**
  - **FXRD-4343VAW / FXRD-4343VAW PLUS**
  - **FXRD-2530VAW / FXRD-2530VAW PLUS**
- Serial number
  - 9 digit-number on the product label
- Explanation of problem
  - Describe as detailed as possible.

7.1.4 Replacement Parts Support

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

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

FCC Compliance

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

For product available in the USA/Canada market, only channel 1~11 can be operated. Selection of other channels is not possible.

RF Exposure Statement :
The equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This device and its antenna must not be co-located or operation in conjunction with any other antenna or transmitter.

This Mobile device has been evaluated for and shown compliant with the FCC RF Exposure limits. The unit of measurement for RF exposure is Specific Absorption Rate (SAR). The FCC SAR limits for mobile is 1.6W/Kg per 1g of tissue. For the SAR values specific to your device, see the Quick Start Guide or User Manual.

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7.3 Revision History

Version	Date	Descriptions
1.0	2019-08-22	• Initial Release

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