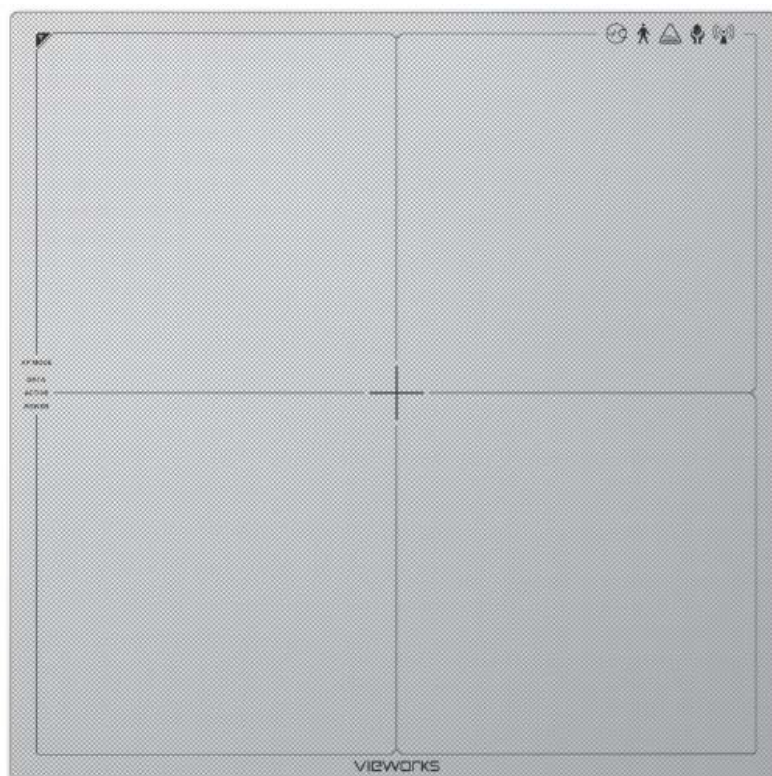


VIVIX-S 1717N Specifications



CE₂₄₆₀

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

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1. Instruction

1.1 Document Guide

1.1.1 Target

This document is intended for customers who use the **VIVIX-S 1717N** detector.

1.1.2 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 and Warning



- 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.

Information



- This symbol is used for indicating product related references and supplementary information. Users are recommended to read the sentences with this notice carefully.

1.1.3 Notations

Bold Types

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

1.2 Revision History

Ver.	Date	Descriptions
1.1	2015-09-22	Initial Release
		(Modified) 2 Products
1.2	2015-10-02	(Modified) 3 Performance (Modified) 5 Regulatory Information
1.3	2016-04-28	(Added) 2 Products
1.4	2016-07-01	(Added) 2 Products
1.5	2016-07-27	(Changed) 2 Products (Changed) 5 Regulatory Information
1.6	2016-11-04	(Changed) 2 Products
1.7	2017-09-08	(Changed) 2.1.1 Specifications
1.8	2018-01-24	(Changed) 5.2 Product Safety Standard (Changed) The European agent address and contact information Changed) Product image on the front cover
1.9	2018-04-13	(Changed) 2.1.1 Specifications - Effective Array (Changed) 2.1.4 Use Environment - Shock and Vibration
2.0	2018-08-01	(Changed) 2.1.2 Drawing Sheet (Changed) 2.1.3 Functions
2.1	2019-05-27	(Changed) 2.1.2 Drawing Sheet (Changed) 5 Regulatory Information

1.3 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

2. Products

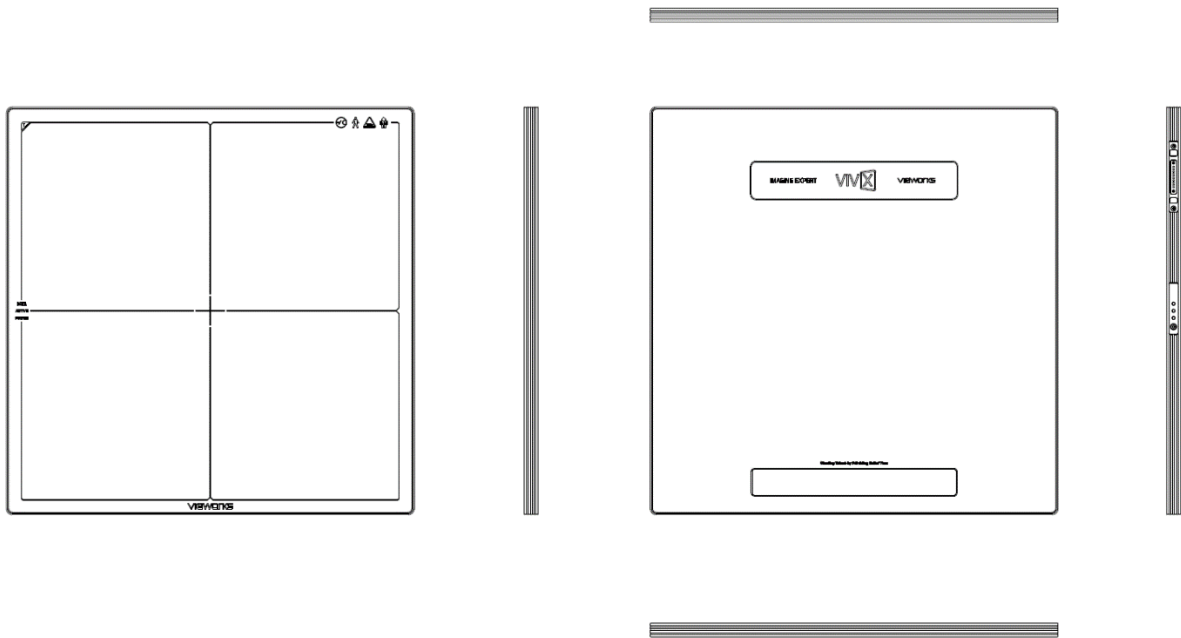
2.1 Detector

2.1.1 Specifications

Item	Specifications
Model	<ul style="list-style-type: none"> FXRD-1717NA (CsI) FXRD-1717NB (Gadox) FXRD-1717NAW (CsI) FXRD-1717NBW (Gadox)
Image Sensor	<ul style="list-style-type: none"> TFT: a-Si (Amorphous Silicon)
X-ray Scintillator type	<ul style="list-style-type: none"> FXRD-1717NA(W): CsI: TI (Thallium doped Caesium Iodide) FXRD-1717NB(W): Gd₂O₂S:Tb (Gadolinium oxysulfide)
Pixel Pitch	<ul style="list-style-type: none"> 0.14mm (140μm)
Field of View	<ul style="list-style-type: none"> 17" x 17"
Active Area (H x V)	<ul style="list-style-type: none"> 430.08mm x 430.08mm
Active Array	<ul style="list-style-type: none"> 3072 x 3072 pixels
Effective Area	<ul style="list-style-type: none"> FXRD-1717NA(W): 426.72mm x 426.72mm FXRD-1717NB(W): 428.4mm x 428.4mm
Effective Array	<ul style="list-style-type: none"> FXRD-1717NA(W): 3048 x 3048 pixels FXRD-1717NB(W): 3060 x 3060 Pixels
Grayscale	<ul style="list-style-type: none"> 16 bit
Spatial Resolution	<ul style="list-style-type: none"> Min. 3.5 lp/mm
Image Acquisition Time (Wired)	<ul style="list-style-type: none"> 1.5 sec.
Image Acquisition Time (Wireless)	<ul style="list-style-type: none"> 3 sec.
Capacity for Image Backup	<ul style="list-style-type: none"> Max. 200 images
Recommended Cycle Time	<ul style="list-style-type: none"> 15 sec.
X-ray Synchronization Control	<ul style="list-style-type: none"> AED (Auto Exposure Detection) DR Trigger (External line trigger) DC +24V, Max. 1A
Rated Power Supply	<ul style="list-style-type: none"> Wired: Powered by SCU with a tether interface cable. Wireless: Powered by a battery pack (3,100 mA h X 2)
Power Consumption	<ul style="list-style-type: none"> Max. 24W
Operating Time	<ul style="list-style-type: none"> 6 hours (when sleep mode is off)
Dimensions (H x W x D)	<ul style="list-style-type: none"> 460mm x 460mm x 15.5mm
Weight	<ul style="list-style-type: none"> 4.2kg (Wired) 4.3kg (Wireless / without a battery pack)
Image Transfer	<ul style="list-style-type: none"> Wired: Gigabit Ethernet (1000BASE-T) via PoE (Power over Ethernet) Wireless: IEEE802.11n
Data Transmission Rate (Wired)	<ul style="list-style-type: none"> Max. 1Gbps
Data Transmission Rate (Wireless)	<ul style="list-style-type: none"> Max. 300Mbps (MIMO 2X2)

2.1.2 Drawing Sheet

FXRD-1717NA / 1717NB (Wired Detector with connecting a tether interface cable)

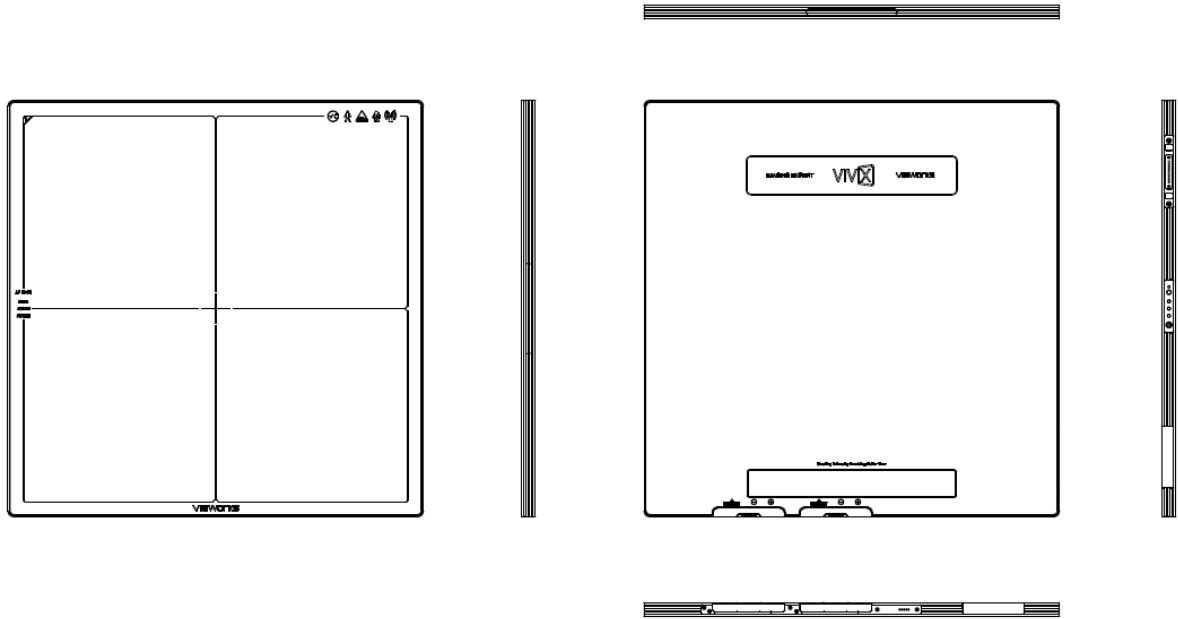


Item	Description
Dimensions (H × W × D)	460.0mm × 460.0mm × 15.5mm
Curvature of Edges	R6.5



- The allowed tolerance of thickness of a detector is from **-2.0mm** ~ **+0.5mm**. (Under the **ISO4090** regulation).

FXRD-1717NAW / 1717NBW (Wireless Detector)



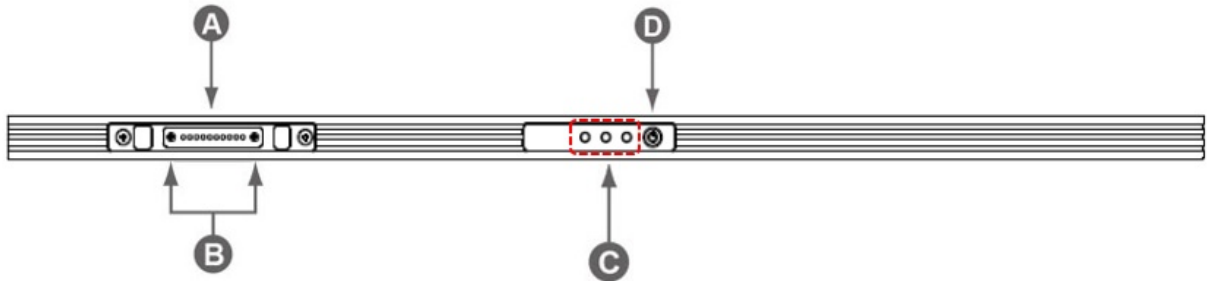
Item	Description
Dimensions (H × W × D)	460.0mm × 460.0mm × 15.5mm
Curvature of Edges	R6.5



- The allowed tolerance of thickness of a detector is from **-2.0mm** ~ **+0.5mm**. (Under the **ISO4090** regulation).

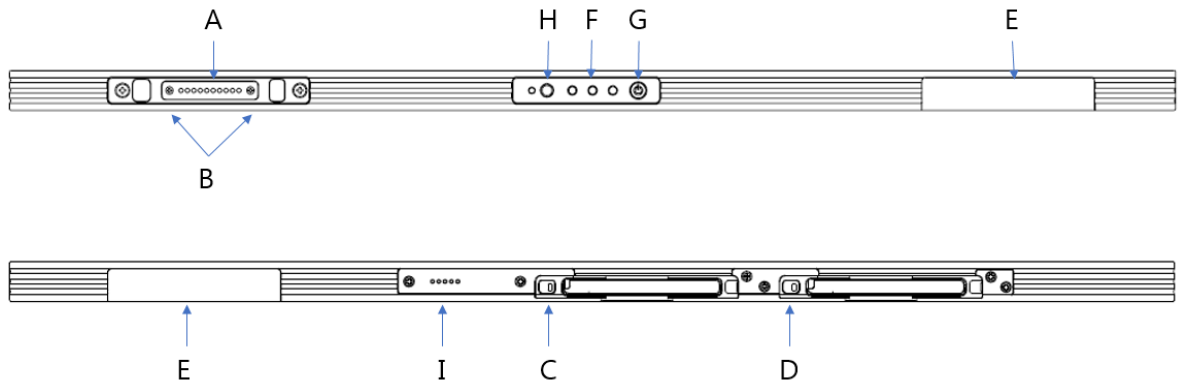
2.1.3 Functions

FXRD-1717NA / 1717NB (Wired)



Name	Description
A Tether interface connector	Used for tighten the tether interface cable. <ul style="list-style-type: none"> Used for wired connection between a detector and SCU.
B Tether interface holder	Fix/release holder of the tether interface cable.
C Status indicator	Detector status indicator <ul style="list-style-type: none"> DATA LED (Blue): Indicates communication and transmission ACTIVE LED (Orange): Indicates ready to work POWER LED (Green): Indicates power On/Off status
D Power button	Detector power button

FXRD-1717NAW / 1717NBW (Wireless)



Name	Description
A Tether interface connector	Used for tightening the tether interface cable. • Used for wired connection between a detector and SCU.
B Tether interface holder	Fix/release holder of the tether interface cable.
C Battery 1 lock/unlock lever	Applied for a FXRB-03A battery pack.
D Battery 2 lock/unlock lever	Applied for a FXRB-03A battery pack.
E Antenna for wireless LAN	Antennas for wireless communication (2EA)
F Status indicator	Detector status indicator • DATA LED (Blue): Indicates communication and transmission • ACTIVE LED (Orange): Indicates ready to work • POWER LED (Green): Indicates power On/Off status
G Power button	Detector power button
H AP ON /OFF Button	Turns on / off the AP mode.
I Battery Remaining LED	Notices the remaining of battery in 5 levels.

2.1.4 Use Environment

Item	Operation	Storage & Transportation
Temperature	+10 ~ +35°C	-15 ~ +55°C
Humidity	30 ~ 85% (Non-condensing)	10 ~ 90% (Non-condensing)
Atmospheric pressure	700 ~ 1060hPa	500 ~ 1060hPa
Shock	20G	30G
Vibration	2G	5G
Drop limit	500mm	500mm

2.2 Battery Pack (FXRB-03A)

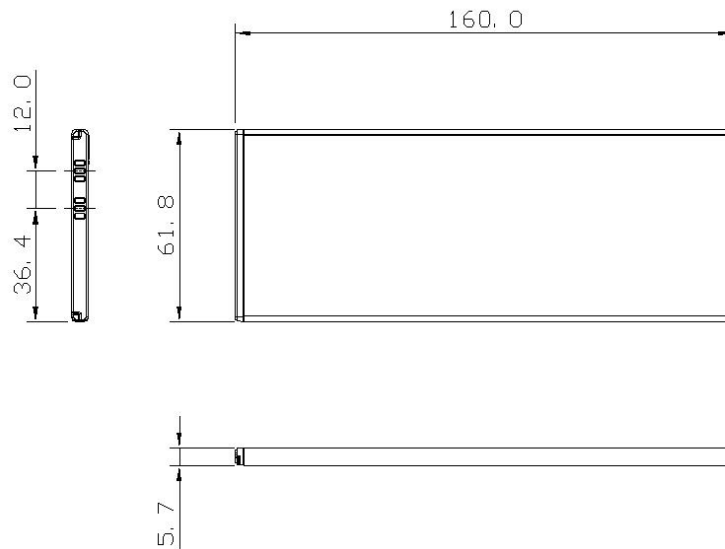
Specifications

Item	Specifications
Model	FXRB-03A
Type	Lithium Ion
Rated Power Supply	Output: DC +7.6V
Capacity	3,100mAh
Number of Cell	2S1P (2 Series 1 Parallel)
Life	Approx. 500 times (Fully charged/Discharged completely, 1 cycle)
Dimension (H × W × D)	160.0mm × 61.8mm × 5.7mm
Weight	115g



- The battery operation time increases under the sleep mode depending on the operational condition and environment.

Drawing Sheet

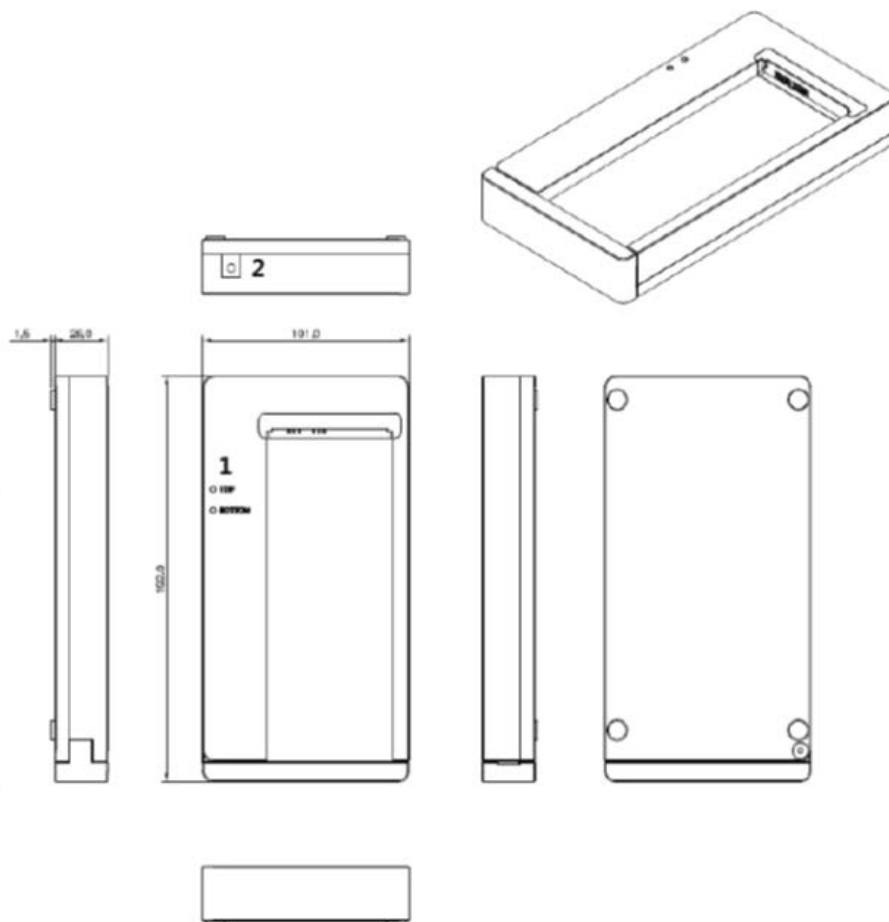


2.3 Battery Charger (FXRC-02A)

2.3.1 Specifications

Item	Specifications
Model	FXRC-02A
Simultaneous Charging	2 battery packs
Charging time	2 1/2 hours
Rated power supply	DC +24V, 2A Max.
Dimension (H × W × D)	192.0mm × 101.0mm × 26.0mm
Weight	0.8 kg

2.3.2 Drawing Sheet



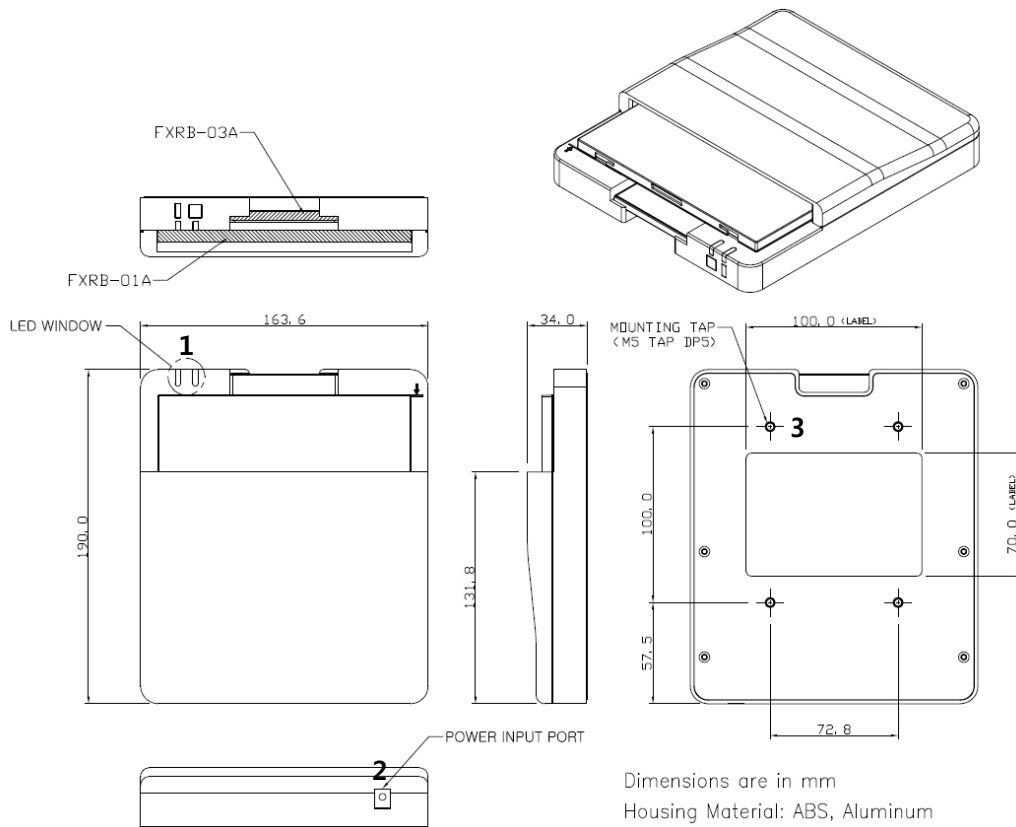
No.	Name	Description
1	Top / Bottom LED	Indicates the position and status of a battery being charged.
2	Power input port	Supplies electric power by connecting a power adapter to the battery charger.

2.4 Battery Charger (FXRC-03A)

2.4.1 Specifications

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

2.4.2 Drawing Sheet



No.	Name	Description
1	LED Window	Indicates the location and status of a battery pack being charged. <div style="display: flex; align-items: center; gap: 10px;"> <div style="border: 1px solid black; width: 15px; height: 15px; display: inline-block;"></div> : FXRB-03A <div style="border: 1px solid black; width: 15px; height: 15px; display: inline-block;"></div> : FXRB-01A </div>
2	Power input port	Supplies electric power by connecting a power adapter to the charger.
3	Mounting hall	Screw holes for fixing the charger to the external device.

3. Performance

3.1 FXRD-1717NA(W) (CsI)

- Test Condition: RQA5, 2.5uGy, IEC 62220-1 Standard
- The typical values are for reference only.

Parameters	Unit	Minimum	Typical	Maximum
Dark Noise	cts	-	4	5
Offset (Black Image)	cts	800	-	1600
Sensitivity at G=1	cts/uGy	550	600	650
Quantum Limited Dose	uGy	-	-	0.2
Signal to Noise Ratio	dB	17	-	-
Max. Exposure Level	uGy	90	-	-
Dynamic Range	a.u	450	-	-
MTF	0.5 lp/mm	87	90	-
	1 lp/mm	68	72	-
	2 lp/mm	36	40	-
	3 lp/mm	19	22	-
DQE	0.5 lp/mm	52	55	-
	1 lp/mm	47	50	-
	2 lp/mm	34	40	-
	3 lp/mm	22	26	-



- The formula of dynamic range is as follows;
 - $Dynamic\ Range = \frac{Max.Exposure\ Level}{Quantum\ Limited\ Dose}$

3.2 FXRD-1717NB(W) (GOS)

- Test Condition: RQA5, 2.5uGy, IEC 62220-1 Standard
- The typical values are for reference only.

Parameters	Unit	Minimum	Typical	Maximum
Dark Noise	cts	-	4	5
Offset (Black Image)	cts	800	-	1600
Sensitivity at G=1	cts/uGy	450	500	550
Quantum Limited Dose	uGy	-	-	0.3
Signal to Noise Ratio	dB	17	-	-
Max. Exposure Level	uGy	110	-	-
Dynamic Range	a.u	400	-	-
MTF	0.5 lp/mm	81	83	-
	1 lp/mm	58	60	-
	2 lp/mm	24	26	-
	3 lp/mm	9	11	-
DQE	0.5 lp/mm	30	33	-
	1 lp/mm	25	27	-
	2 lp/mm	16	18	-
	3 lp/mm	6	9	-



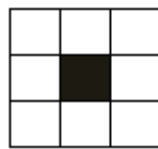
- The formula of dynamic range is as follows;

$$\square \text{ Dynamic Range} = \frac{\text{Max.Exposure Level}}{\text{Quantum Limited Dose}}$$

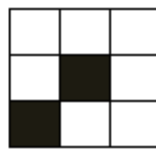
4. Defect

4.1 Defect Type

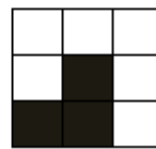
Type	Description
Single Defect	Isolated defects, adjacent pixels are normal. (Class 0)
Cluster Defect	More than consecutive 2 pixels are defected. (Class 1~Class 8)
Line Defect	Defect occur horizontal direction from left to right, or vertical direction from top to bottom.



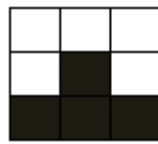
class 0



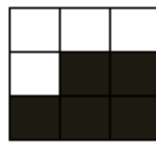
class 1



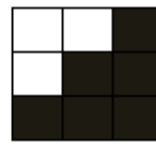
class 2



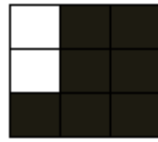
class 3



class 4



class 5



class 6



class 7



class 8



- No cluster defects are allowed over 3x3 pixels.

4.2 Defect Allowance

Item	Unit	Value
Total number of pixel defects	cts	Max. 20,000 pixels
Number of line defects	cts	Max. 5 lines
Number of normal lines between two bad lines	cts	Min. 3 lines

5. Regulatory Information

5.1 Medical Equipment Classification

Item	
Type of protection against electrical shock	Wired Model: Class I Wireless Model: Class I or Internally Powered
Degree of protection against electrical shock	Type B applied parts
Degree of protection against ingress of water	IP53 (Degrees of protection against ingress of water and dust provided by enclosure.)
Operation mode	Continuous operation
Flammable anesthetics	NOT suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide.

5.2 Product Safety Standard

USA / Canada

Item	
IEC 60601-1:2012 (ed. 3.1)	Medical electrical equipment- Part1: General requirements for safety
CAN/CSA-C22.2 No. 60601-1(2008)	Medical electrical equipment – Part 1: General requirements for safety (adopted amendment 2:1995 to IEC60601-1)
IEC 60601-1-2: 2014 (ed.4)	Medical electrical equipment-Part 1-2: Collateral standard: Electromagnetic compatibility
IEC 62304:2006	Medical device software-software life cycle processes
ISO 14971:2012	Medical Device- Application of risk management to medical devices

European Union

Item	
MDD (Medical Device Directive)	93/42/EEC as amended by 2007/47/EC
EN ISO 13485:2016	Medical devices – Quality Management systems – Requirements for regulatory purposes
EN 60601-1: 2006(ed.3)	Medical electrical equipment- Part1: General requirements for safety
IEC 60601-1: 2012(ed. 3.1)	Medical electrical equipment- Part1: General requirements for safety
EN 60601-1-2: 2014(ed.4)	Medical electrical equipment-Part 1-2: Collateral Standard : Electromagnetic compatibility-Requirements and tests
EN 62304:2006	Medical device software-Software life cycle processes
ISO 14971: 2012	Medical device – Application of risk management to medical devices.

VIEWWORKS

Vieworks.Co., Ltd

(Gwanyang-dong) 41-3, Burim-ro 170beon-gil, Dongan-gu, Anyang-si,

Gyeonggi-do, 14055 Republic of Korea

Telephone: +82-70-7011-6161

Fax: +82-31-386-8631

Homepage: <http://www.vieworks.com>

**European representative: Obelis s.a**

Bd. Général Wahis 53

1030 Brussels, BELGIUM

Tel: +(32) 2.732.59.54

Fax: +(32) 2.732.60.03

E-mail: mail@obelis.net

