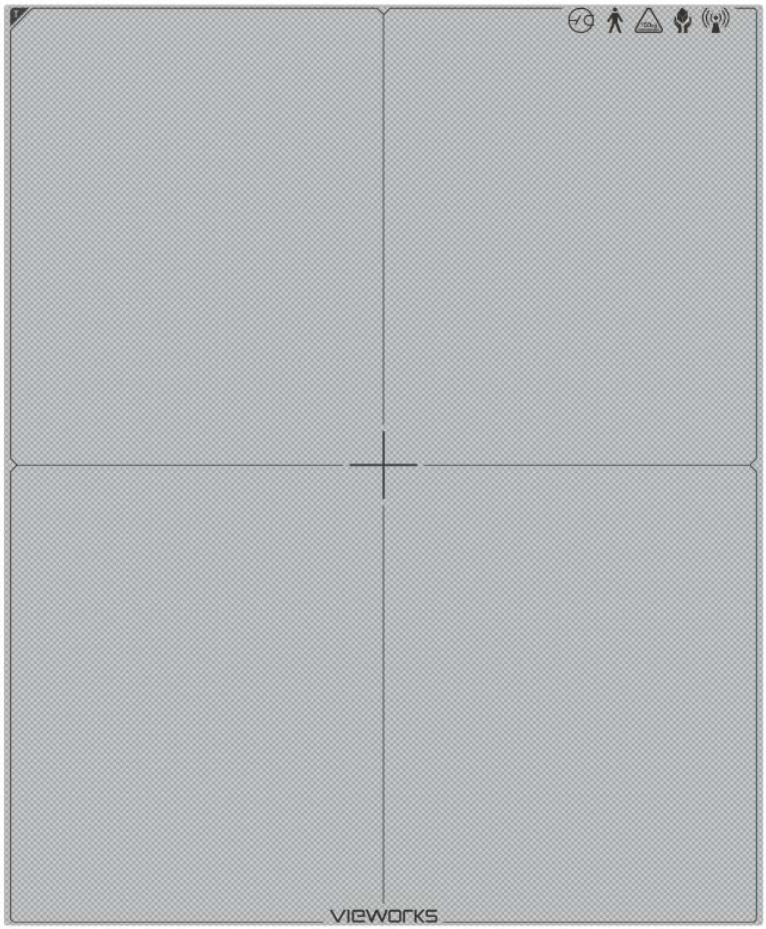
vieworks Imaging Expert

VIVIX-S 1417W Specifications



CE 2460

Contents

1. Instruction

1.1 Document Guide

This specifications guide is made for the service engineers who install and diagnose **VIVIX-S 1417W** wireless detector made by Vieworks. The field engineers in each serviced area can improve service quality by understanding various contents of this guide, which are not included in the user manual.

1.1.1 Target

This manual is intended for the users who install and set up the **VIVIX-S 1417W Wireless** 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

- 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
1.0	2013-10-04	• Initial Release
2.0	2013-11-26	• (Changed) Front cover • (Changed) 4 Image Sensor
3.0	2014-01-16	• (Added) 3.2 GOS + Amorphous Silicon Photodiode • (Changed) 2.2 FXRD–1417W
4.0	2014-03-04	• (Changed) 2.1 FXRD 1417S/1717S • (Changed) 2.2 FXRD-1417W • (Changed) 5 Detector
4.1	2014-03-24	• (Changed) 2.1 FXRD-1417S/1717S • (Changed) 2.2 FXRD-1417W
5.0	2014-06-20	• Overall Revised • (Changed) Document format • (Changed) 2 Specifications • (Changed) 3 Detector Composition • (Changed) 4 Performance
5.1	2014-06-25	• (Changed) 2. Specifications
5.2	2014-07-23	• (Changed) Front Cover • (Changed) 2.3 Environmental Requirements
5.3	2014-08-22	• Applied the new corporate logo
5.4	2014-09-24	• (Changed) Contact address and fax number • (Changed) 4 Performance • (Added) 5.2 Defect Allowance
5.5	2014-12-04	• (Revised) Document format / Layout • (Added) 2 Products
5.6	2015-10-02	• (Changed) 1.3 Contact Department • (Changed) 3 Performance
5.7	2016-04-28	• (Changed) 5 Regulatory Information
5.8	2016-06-21	• (Added) 2 Products
5.9	2016-11-11	• (Changed) 2. Specifications
6.0	2017-07-28	• (Changed) Communaut European mark on the front page • (Changed) Postal code of the headquarter
6.1	2018-01-11	• Changed the European agent address and contact information
6.2	2018-04-13	• (Changed) Product image on the front cover • (Changed) 2.1.1 Specifications - Effective Array • (Changed) 2.1.4 Use Environment - Shock and Vibration

1.3 Contact Department

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

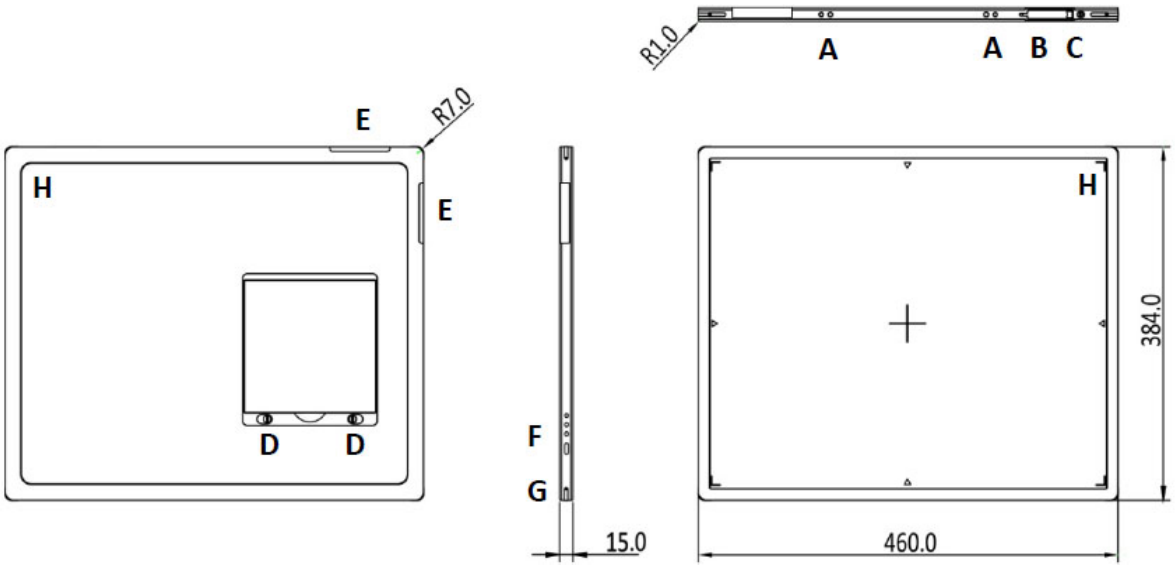
2.1.1 Specifications

Item	Specifications
Model	• FXRD-1417WA (CsI) / FXRD-1417WB (Gadox)
Image Sensor	• a-Si (Amorphous Silicon) TFT • Panel Size: 368㎜ x 442㎜ • Fill Factor : 75%
X-ray Scintillator type	• FXRD-1417WA : CsI: TI (Thallium doped Caesium Iodide) • FXRD-1417WB : Gd2O2S:Tb (Gadolinium oxysulfide)
Pixel Pitch	• 0.14㎜ (140㎛)
Field of View	• 14" x 17"
Active Area (H x V)	• 358.4㎜ × 430.08㎜
Active Array	• 2560 x 3072 pixels
Effective Area	• FXRD-1417WA: 356.72㎜ x 428.4㎜ • FXRD-1417WB: 358.4㎜ x 430.08㎜
Effective Array	• FXRD-1417WA : 2536 x 3048 • FXRD-1417WB : 2548 x 3060
Grayscale	• 14bit
Spatial Resolution	• Min. 3.5 lp/㎜
Image Acquisition Time (Wired)	• 2 sec.
Image Acquisition Time (Wireless)	• Preview Acquisition Time: 2 sec. • High Resolution Acqusition Time: 4.5sec. (Including Preview Time)
Capacity for Image Backup	• Max. 100 images
Recommended Cycle Time	• 15 sec.
X-ray Synchronization Control	• AED (Auto Exposure Detection) • DR Trigger (External line trigger)
Rated Power Supply	• Wired: Powered by SCU with tether interface connection. • Wireless: Powered by a battery pack (4,000 ㎃h)
Power Comsumption	• Max. 12 W
Operation Time	• 4 Hours (On battery operation/when sleep mode is off)
Dimensions (H x W x D)	• 384㎜ × 460㎜ × 15㎜
Weight (Without a battery pack)	• FXRD-1417WA: 3.2kg • FXRD-1417WB: 3.1kg
Image Transfer	• Wired: Gigabit Ethernet (1000BASE-T) via PoE (Power over Ethernet) • Wireless : IEEE802.11a/b/g/n

Data Transmission Rate (Wired)	• Max. 1Gbps
Data Transmission Rate (Wireless)	• 802.11b: Max. 11Mbps • 802.11a/g: Max. 54Mbps • 802.11n: Max. 300Mbps (MIMO 2X2)

• X-ray exposure time is not included in preview & high resolution acquisition time.

2.1.2 Drawing Sheet



Item	Description
Dimensions (H × W × D)	384.0㎜ × 460.0㎜ × 15.0㎜
Curvature of Edges	R7.0

• The allowed tolerance of a thickness of detector is from -**2.0㎜ ~ +1.0㎜**. (Under the **ISO4090** regulation).

2.1.3 Functions

	Name	Description
A	**Grooves**	• Used for installing a handle or grid holders.
B	**Tether Interface Connector**	• Used for tighten the tether interface cable. • Used for wired connection between the detector and SCU.
C	**Tether Interface Holder**	• Fix/release holder of the tether interface cable.
D	**Battery Lock Lever**	• Lock/unlock lever of the equipped battery pack.
E	**Antenna for Wireless LAN**	• Antennas for wireless communication. (2 EA)

F	**Status Indicator**	• Detector status indicators ▫ **DATA LED** (Blue): Indicates data communication/transmission. ▫ **ACTIVE LED** (Orange): Indiates ready to work. ▫ **POWER LED** (Green): Indicates power on/off status.
G	**Power Button**	• Detector power button
H	**Image Starting Point**	• Location of imaging starting point (0.0)

2.1.4 Use Environment

Item	Operation	Storage & Transportation
Temperature	+10 ~ +35℃	-15 ~ +55℃
Humidity	30% ~ 85% (Non-condensing)	10% ~ 90% (Non-condensing)
Atmospheric Pressure	700 ~ 1060Pa	500 ~ 1060Pa
Shock	20G	30G
Vibration	2G	5G
Aging Time (After power on)	1 hour	-

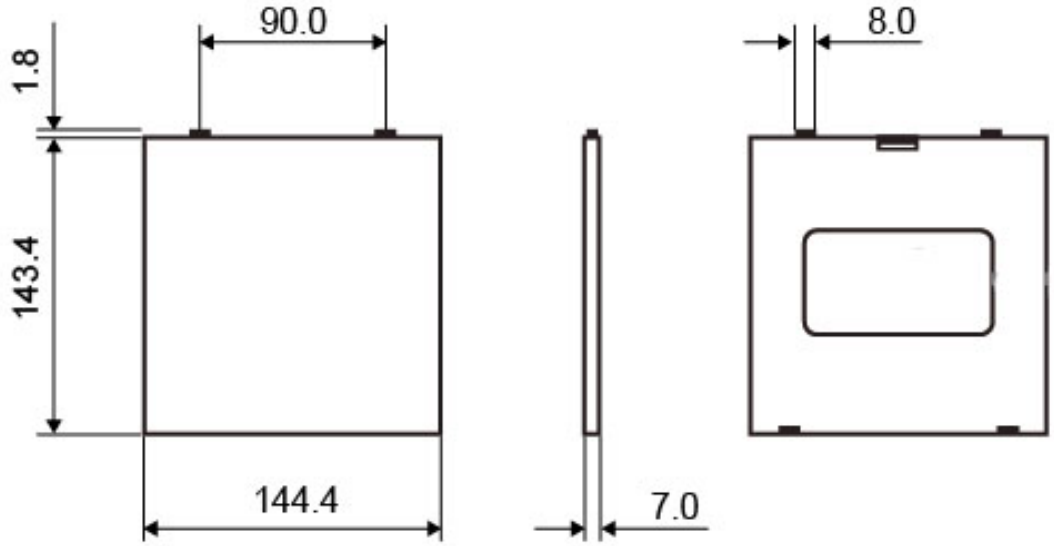
2.2 Battery Pack

2.2.1 Specifications

Item	Specifications
Model	FXRB-01A
Type	Lithium Ion
Rated Power Supply	Output: DC +7.4V
Capacity	4,000mAh
Number of Cell	2S1P (2 Series 1 Parallel)
Charging Time	2 hours
Cycle Life	Approx. 500 cycles, Capacity ≥ 80% (100% = 4,000mAh)
Weight	220g

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

2.2.2 Drawing Sheet



3. Performance

3.1 FXRD-1417WA (CsI)

- Test condition : RQA5, 2.5uGy, IEC 62220-1 standard

Parameters	Unit	Minimum	Typical	Maximum
Dark Noise	cts	-	2.5	3
Offset (Black image)	cts	800	-	1400
Sensitivity at G=1	cts/uGy	130	140	150
Quantum Limited Dose	uGy	-	-	0.4
Signal to Noise Ratio	dB	17	-	-
Max. Exposure Level	uGy	90	-	-
Dynamic Range	a.u	225	-	-
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	56	-
	1 lp/mm	47	51	-
	2 lp/mm	31	37	-
	3 lp/mm	16	22	-

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

3.2 FXRD-1417WB (GOS)

- Test condition : RQA5, 2.5uGy, IEC 62220-1 standard

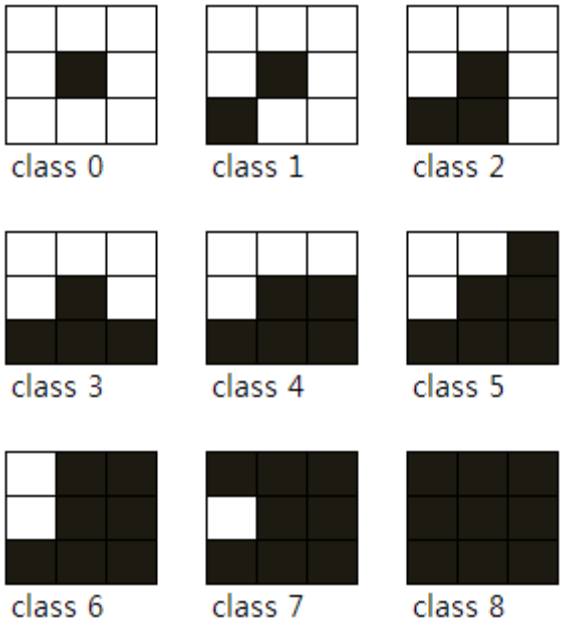
Parameters	Unit	Minimum	Typical	Maximum
Dark Noise	cts	-	2.5	3
Offset (Black image)	cts	800	-	1400
Sensitivity at G=1	cts/uGy	105	115	125
Quantum Limited Dose	uGy	-	-	0.6
Signal to Noise Ratio	dB	17	-	-
Max. Exposure Level	uGy	110	-	-
Dynamic Range	a.u	225	-	-
MTF	0.5 lp/mm	81	83	-
	1 lp/mm	58	60	-
	2 lp/mm	24	26	-
	3 lp/mm	9	11	-
DQE	0.5 lp/mm	30	33	-
	1 lp/mm	22	26	-
	2 lp/mm	13	15	-
	3 lp/mm	4	6	-

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

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 ro right, or vertical direction from top to bottom.



- 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	Class Ⅰ or Internally Powered
Degree of protection against electrical shock	Type B applied parts
Degree of protection against ingress of water and dust	IPX3 (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(ed.2 am1+ am2+ co1)	Medical electrical equipment- Part1: General requirements for safety
UL 60601-1(ed.2)	-
CSA-C22.2 No. 601-1-M90 (R2006)	Medical electrical equipment – Part 1: General requirements for safety (adopted amendment 2:1995 to IEC60601-1)
IEC 60601-1-2: 2007(ed.3)	Medical electrical equipment-Part 1-2: Collateral standard: Electromagnetic compatibility
IEC 60601-1-4: 2000(ed.1.1)	Medical electrical equipment- Part 1-4: Collateral Standard: Programmable electrical medical systems
IEC 62304:2006	Medical device software-software life cycle processes
ISO 14971:2012	Medical Device- Application of risk management to medical devices

European Union

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

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