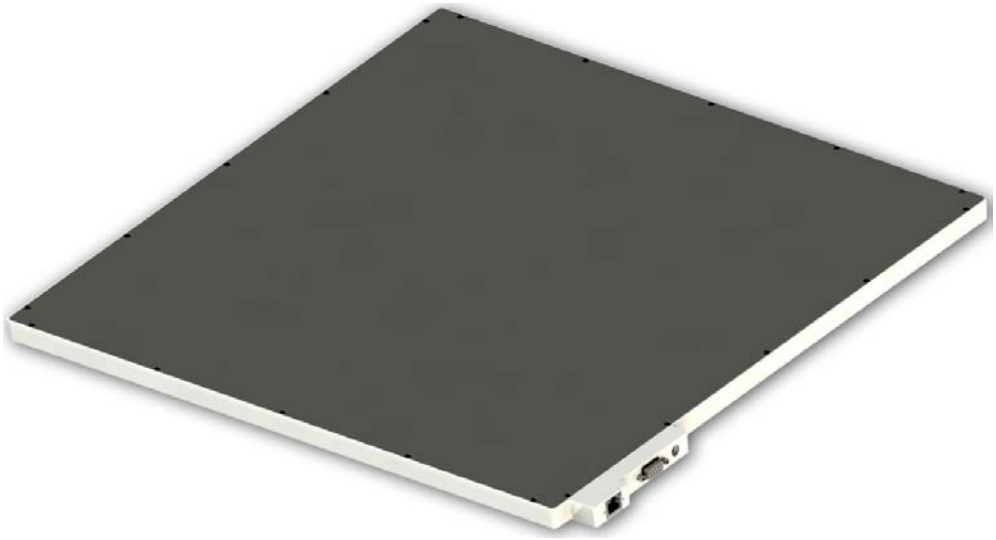
vieworks Imaging Expert

VIVIX-S 1717V Specifications



CE 2460

Contents

1. Instruction

1.1 Document Guide

This document is made for the service engineers who install and diagnose **VIVIX-S 1717V** 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 operation manual.

1.1.1 Target

This document is intended for service enginneers who install and set the **VIVIX-S 1717V** 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
1.0	2017-08-31	• Initial Release
1.1	2018-01-25	• Changed the European agent address and contact 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

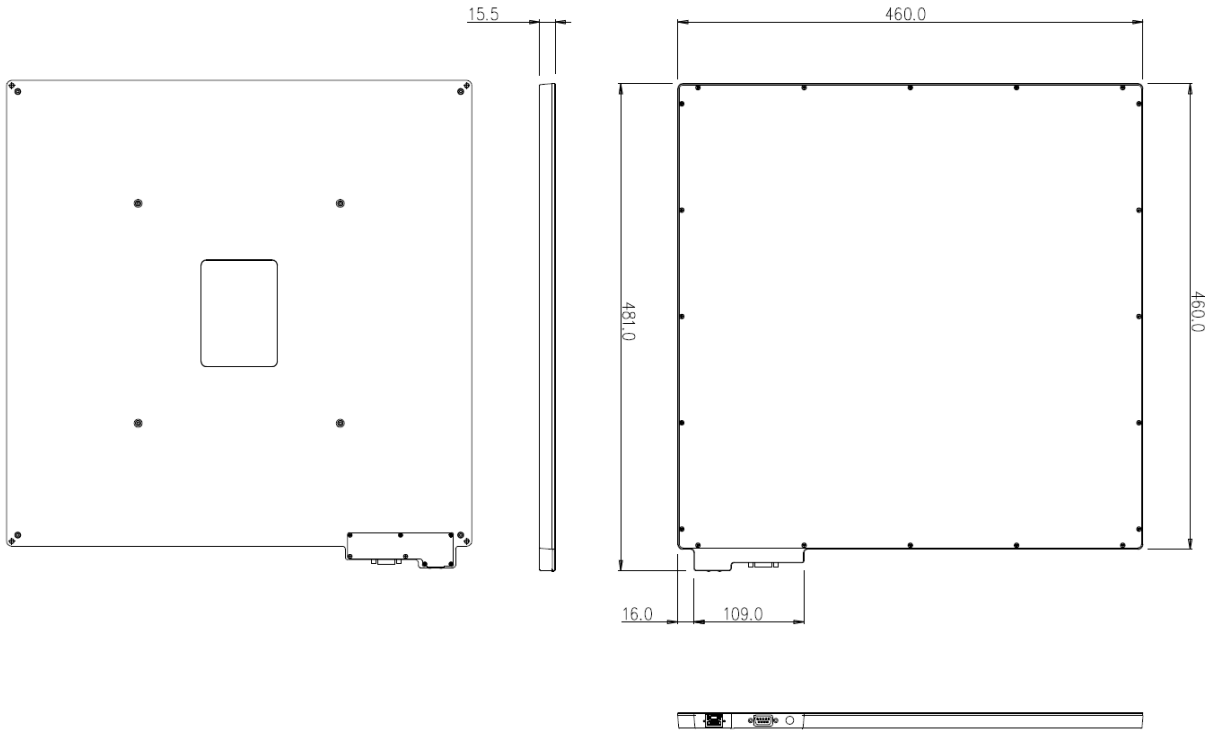
2.1 Detector

2.1.1 Specifications

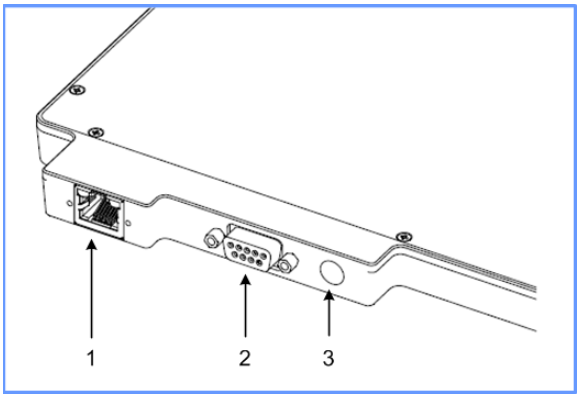
Item	Specifications
Model	• FXRD-1717VA (CsI) • FXRD-1717VB (Gadox)
Image Sensor	• a-Si (Amorphous Silicon)
X-ray Scintillator Type	• FXRD-1717VA : CsI: TI (Thallium doped Caesuim Iodide) • FXRD-1717VB : Gd_2O_2S:Tb (Gadolinium oxysulfide)
Pixel Pitch	• 0.14㎜ (140㎛)
Field of View	• 17″ x 17″
Active Area (H x V)	• 430.08㎜ × 430.08㎜
Active Array	• 3072 x 3072 pixels
Effective Area	• FXRD-1717VA: 426.72㎜ x 426.72㎜ • FXRD-1717VB: 426.72㎜ x 426.72㎜ (Min.)
Effective Array	• FXRD-1717VA : 3048 x 3048 • FXRD-1717VB : 3048 x 3048 (Min.)
Grayscale	• 16bit
Spatial Resolution	• 3.5 lp/㎜ (Min.)
Image Acquisition Time	• 2 sec. (Image acquisition / transfer time)
Recommended Cycle Time	• 15 sec.
X-ray Synchronization Control	• AED (Auto Exposure Detection) • DR Trigger (External line trigger) • Passive Trigger (External line trigger)
Rated Power Supply	• DC +24V, Max. 0.625 A ▫ Power to detector from IO BOX via IO Interface cable.
Power Consumption	• Max. 15 W
Dimensions (H × W × D)	• 460㎜ × 460㎜ × 15.5㎜
Weight	• 4.5 kg
Image Transfer	• 16 bit Digital Output Ethernet (1000BASE-T)
Data Transmission Rate (Wired)	• Max. 1Gbps

• X-ray exposure time is not included in the image acquisition time.

2.1.2 Drawing Sheet



2.1.3 Functions



	Name	Description
1	**LAN Port**	• Gigabit Ethernet port (1000BASE-T) • Data communication between the detector and PC
2	**IO Port**	• D-SUB 9 pins, Male • DC 24V Input & IO Interface • D-SUB connector Power Pin map (+24V Pin: 3, 8, GND Pin: 4, 9) • (24V, 0.625A or more recommended)

3	**Status Light [Transmission]**	• Detector communication and transmission status (orange-green flashing)
	Status Light [STATUS]	• Detector boot status (orange)
	Status Light [POWER]	• Power on state (green)

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	70 ~ 106kPa	50 ~ 106kPa
Shock	1.6G	20G
Vibration	0.7G	0.7G

3. Performance

3.1 FXRD-1717VA (CsI)

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

Parameters	Unit	Minimum	Typical	Maximum
Dark Noise	cts	-	4	5
Offset (Black image)	cts	1500	-	3500
Sensitivity at G=1	cts/uGy	550	600	650
Quantum Limited Dose	uGy	-	-	0.2
Signal to Noise Ratio	dB	16	-	-
Max. Exposure Level	uGy	90	-	-
Dynamic Range	a.u	450	-	-
MTF	0.5 lp/mm	83	88	-
	1 lp/mm	63	70	-
	2 lp/mm	30	38	-
	3 lp/mm	14	21	-
DQE	0.5 lp/mm	38	55	-
	1 lp/mm	33	48	-
	2 lp/mm	23	34	-
	3 lp/mm	14	20	-

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

3.2 FXRD-1717VB (GOS)

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

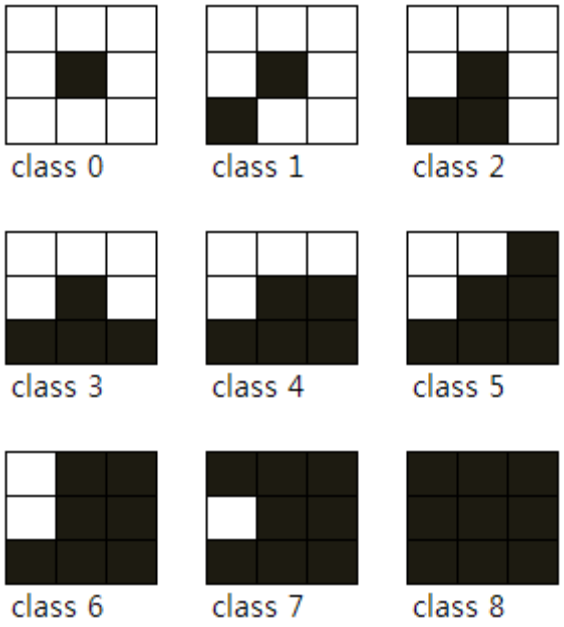
Parameters	Unit	Minimum	Typical	Maximum
Dark Noise	cts	-	4	5
Offset (Black image)	cts	1500	-	3500
Sensitivity at G=1	cts/uGy	450	500	550
Quantum Limited Dose	uGy	-	-	0.3
Signal to Noise Ratio	dB	16	-	-
Max. Exposure Level	uGy	110	-	-
Dynamic Range	a.u	400	-	-
MTF	0.5 lp/mm	81	83	-
	1 lp/mm	56	58	-
	2 lp/mm	22	24	-
	3 lp/mm	9	10	-
DQE	0.5 lp/mm	30	33	-
	1 lp/mm	22	26	-
	2 lp/mm	12	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. 50,000 pixels
Number of line defects	cts	Max. 10 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
Degree of protection against electrical shock	Operator accessible
Degree of protection against ingress of water and dust	IPX0 (Degrees of protection againt 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

South Korea

Electrical and mechanical safety tests shall be in accordance with IEC 60601-1.
Test for the prevention of electromagnetic interference: According to IEC 60601-1-2.

USA / Canada

Item	
IEC 60601-1:2012(ed.3.1)	Medical electrical equipment- Part 1: General requirements for safety.
UL 60601-1(ed3.1)	-
CAN/CSA-C22.2 NO. 60601-1:14	Medical electrical equipment –Part 1: General requirements for basic safety and essential performance
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) Medical Device Directive
EN ISO 13485:2012	Medical devices – Quality Management systems – Requirements for regulatory purposes
IEC 60601-1 : 2012(ed.3.1)	Medical electrical equipment- Part1: General requirements for safety
IEC 60601-1-2:2014 (ed.4)	Medical electrical equipment -Part 1-2: Collateral standard: Electromagnetic compatibility-Requirements and tests
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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