



Typical application areas

- ▶ small field radiography
- ▶ lab sample and specimen imaging
- ▶ small animal
- ▶ industrial inspection (NDT)
- ▶ dental: cone beam CT

The 1512 is a high speed, low noise X-ray detector with excellent sensitivity. It employs state-of-the-art large-area CMOS image sensor technology and is supplied with a range of scintillator and interface options.

With switchable pixel gain, the 1512 is optimised for both static imaging at high dynamic range, and for real-time imaging with low dose per image.

Product features

- ▶ 75µm pixel pitch
- ▶ 1944 x 1536 pixels
- ▶ high-sensitivity and high-saturation modes
- ▶ binning to 4x4
- ▶ high DQE
- ▶ 14 bit digital output
- ▶ scintillator options CsI 150µm, CsI 600µm, Gadox
- ▶ BNC input/output for X-ray generator triggering
- ▶ Camera Link, USB or Ethernet data connection

Image acquisition

Pixel size	74.8µm	MTF at 6 lp/mm ¹	>20%
Sensitive area	145.4 mm x 114.9 mm	DQE ²	> 0.7 at 0.5 lp/mm
Resolution	1944 x 1536 pixels	Saturation charge ³	1.4 Me ⁻ (high saturation mode) 0.36 Me ⁻ (high sensitivity mode)
Sensor type	CMOS active pixel sensor	ADC resolution	14 bits
Pixel binning	1x1, 1x2, 1x4, 2x1, 2x2, 2x4 4x1, 4x2, 4x4	Detector dynamic range ⁴	typ. 70dB (high saturation mode) typ. 66dB (high sensitivity mode)
		Dark current	8000 e ⁻ /s (typ at 40C)

Interfaces

Camera Link option	Camera Link Base 80MHz (1 cable)
Ethernet option	1000BaseT, GigE Vision
USB option	USB 2.0 Hi-Speed
Control channel	115 kBaud serial link carried by Camera Link / Ethernet / USB
Sync in port	3 - 15V, edge or level trigger , BNC
Sync out port	TTL (0 - 3.3V), BNC

Sustained frame rate (Hz)

	Camera Link	Ethernet	USB
1x1	26	11	6
1x2	53	23	13
1x4	72	46	8
2x1	35	23	17
2x2	70	46	9
2x4	81	81	19
4x1	39	39	18
4x2	79	79	20
4x4	86	86	21

¹ 150µm CsI scintillator

² 600µm CsI scintillator, RQA5 (74kVp)

³ For model 1512-C-4B-C600B, saturation charge is 1.0 Me⁻ (high saturation mode), 0.25 Me⁻ (high sensitivity mode).

⁴ For model 1512-C-4B-C600B, dynamic range is 67dB (high saturation mode), 63dB (high sensitivity mode).

Programmable features

Switchable pixel gain	Pixel conversion gain is switchable, allowing high-sensitivity or high-saturation operation.
Dynamically configurable binning	Pixel size and aspect ratio can be programmed in the fly, enabling optimised data acquisition for CT.
Standby mode	Power-down of the detector when not imaging, to conserve power and reduce detector temperature.
Exposure sensing mode	144 x 96 non-destructive readout pixels, evenly distributed across the imaging area, can be used to measure the exposure during the integration process.
External Trigger modes	<ul style="list-style-type: none">▶ Edge-trigger mode (X-ray generator triggered by detector)▶ Duration mode (detector triggered by X-ray generator)▶ Software mode (detector triggered by host computer)
Dark level offset	Sensor offset can be adjusted by software to optimise the dynamic range of the sensor.
Test pattern	An internally generated grey scale image is available for data communication test.
Exposure time	Can be programmed from 38 ms (at full resolution) to 120 s.
Multi-exposure control	Automatic multiple exposure, for combining images from an object with high density ratio.

Standards compliance

CE marked. UL & CSA listed.
For compatibility with OEM medical systems, the product and its accessories have been certified to standards according to the EU Medical Devices Directive:

- ▶ IEC 60601-1 (Electrical safety)
- ▶ IEC 60601-1-2 (Electromagnetic compatibility) Class A device.

Accessories

- ▶ power cable: 3m, XLR to DB9
- ▶ mains power supply unit 110V – 240V AC
- ▶ EPIX EB1 Camera Link board for PC

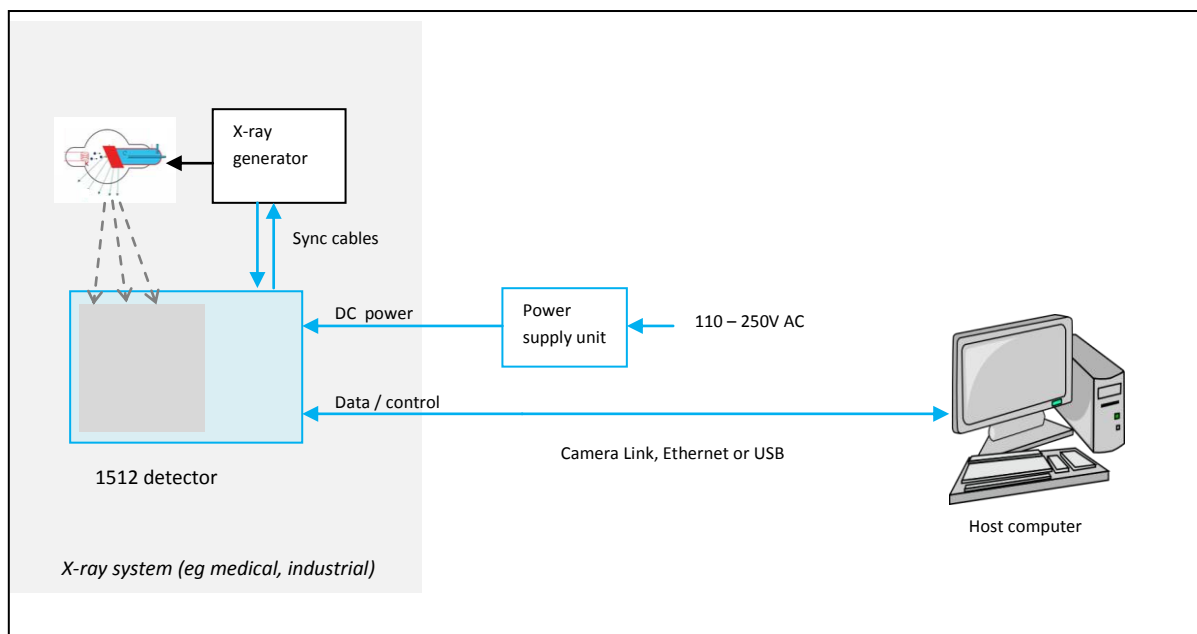
Scintillator options

- ▶ 150µm thick CsI on amorphous carbon substrate
- ▶ 600µm thick CsI on aluminium substrate
- ▶ Gadox sheet: DRZ Standard, DRZ Plus, or AD Mammo Fine

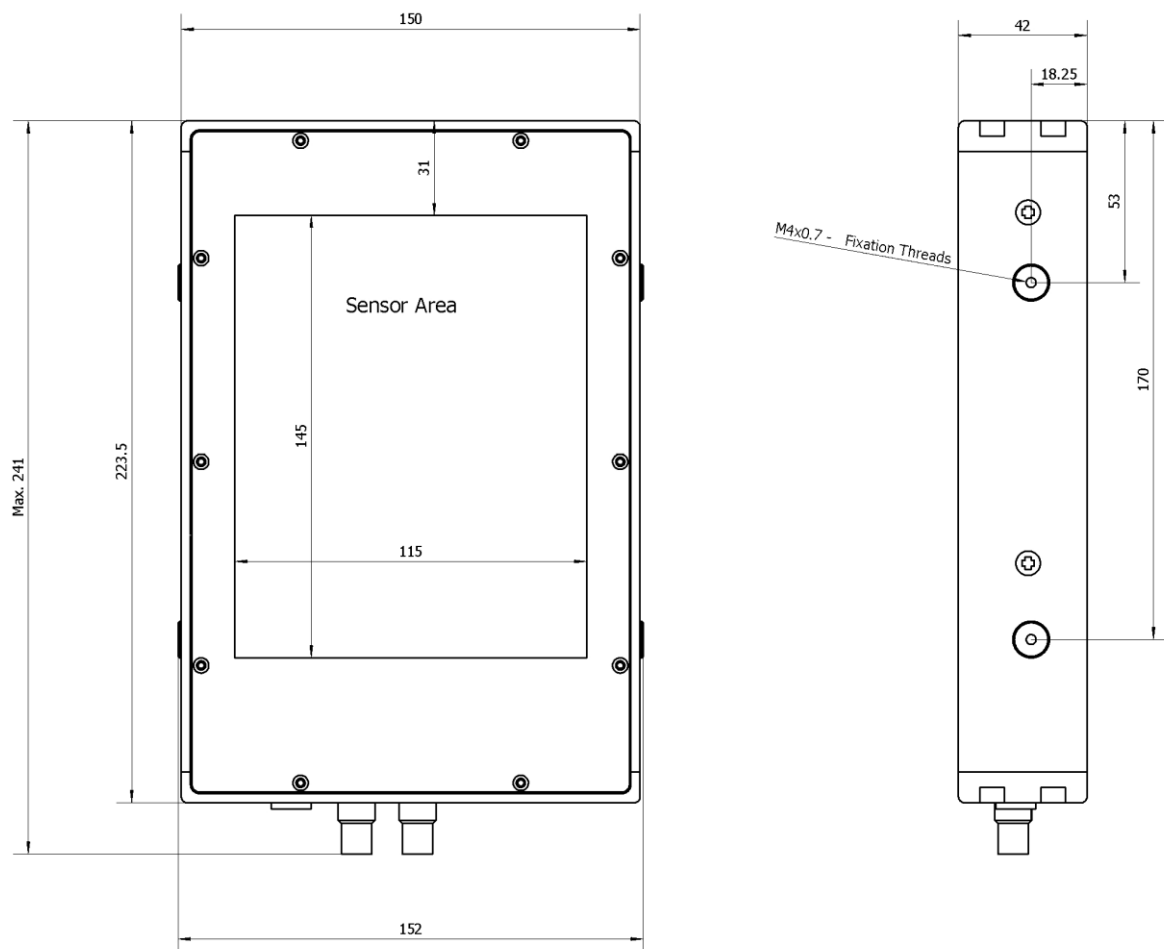
Temperature range

- ▶ Operating temperature: +10C to +40C
- ▶ Storage temperature: -10C to +50C

Connections



Case dimensions



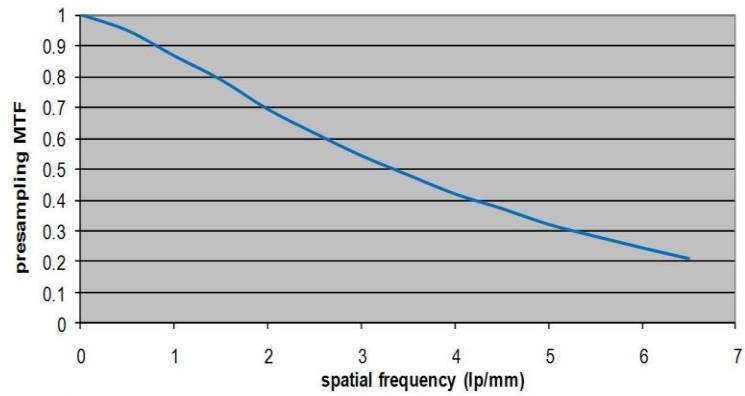
The USB option is shown. The Camera Link and GigE options differ in the connector panel design, but have dimensions as indicated.

Mounting: use the two M4 threaded inserts on each side of the enclosure, shown dimensioned.

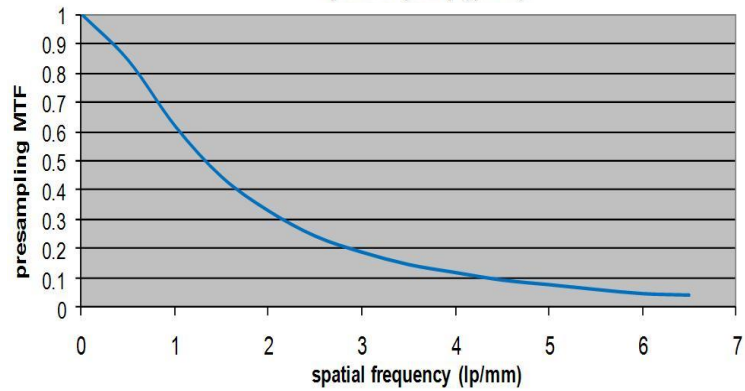
Weight: 2.0 kg

Resolution

150 μ m CsI



600 μ m CsI



DC supply requirements

Voltage inputs and currents	1: +4.0 to +4.5V 1A 2: +6.0 to +7.5V 0.6A 3: -6.0 to -7.5V 0.25A
Connector type	D-sub male 9-way
Ripple/noise input	Max 1% peak over 0-20MHz
Power-down current	Input 1: < 150mA Inputs 2,3: <1mA
Power dissipation (active)	12W max

Part numbers

1512-C-4B-C600B

1512-C-3A-GDRZP

1512-U-2A-GADM

Camera Link, 4mm radiation hard FOP, 600 μ m CsI scintillator

Camera Link, 3mm normal FOP, Gadox (DRZ+) scintillator

USB, 2mm normal FOP, Gadox (AD-Mammo Fine) scintillator

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