



CARERAY
DIGITAL MEDICAL



**We invent
We Manufacture
We Care**





About CareRay

Established in 2007, CareRay Digital Medical System Co. is dedicated to the innovation and production of the newest generation of flat panel detectors for medical, veterinary, security and industrial digital X-ray imaging systems.

CareRay excels at developing and manufacturing high-performance cesium iodide (CsI) detectors and offers a complete line of sizes of fixed, portable and wireless models. CareRay also customizes production upon request and welcomes product partners.

CareRay's award winning R&D team of experts has created more than a dozen significant technology patents, which we use to produce superior flat panel detectors for the global market.

Our global sales, service and support office is located in San Jose, California, USA.
Our R&D department and production facility are located in the SuZhou Industrial Park in China.

Through the pursuit of excellence, optimized engineering and disciplined fabrication processes, CareRay provides customers with advanced, robust, user-friendly flat panel detectors and software.

Our mission as a technology innovator and international supplier is to revolutionize diagnostic imaging by sharing the benefits of our scientific and functional advances.

Dealers and OEM Manufacturers, we welcome your enquiries on our product line, our customized production programs and our latest R&D break-throughs !



CareView® Series Leading Technology

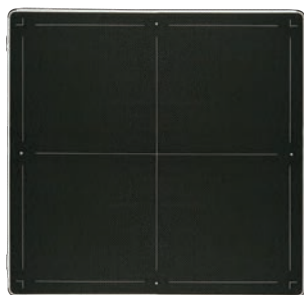
CareRay is technologically adept at CsI scintillator growth, TFT/PD panel design and fabrication, and detector system design and integration. CareView® series X-ray flat panel detectors incorporate the proven technology of amorphous silicon. Unlike many manufacturers, we grow CsI in-house according to our high standards and advanced procedures.

The CsI scintillator, which is deposited directly on our flat panel substrate in a high temperature and high vacuum environment, has unique micro needle structure that results in outstanding conversion efficiency from X-ray to visible photon, excellent spatial resolution, and stability.

CareRay's detectors offer superior performance with expansive dynamic range, excellent sensitivity, high signal-to-noise ratio, and reliable environment adaptability.

Based on performance requirements, through optimized CsI scintillators, photodiodes and TFTs, CareRay can supply outstanding flat panel detectors to meet a broad range of applications.

CareView® Series Flat Panel Detectors



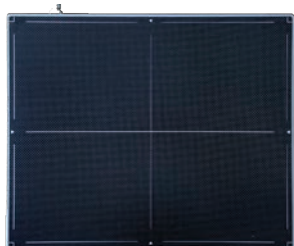
1800R 17X17"



1800L 17X17"



1800i 17X17"



1500L 14X17"



1500C 14X17"



1500Cw 14X17"



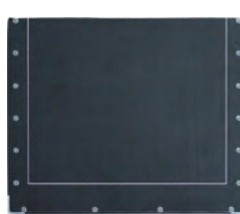
1500P 14X17"



750M 10X12"



750P 10X12"



500M 8X10"



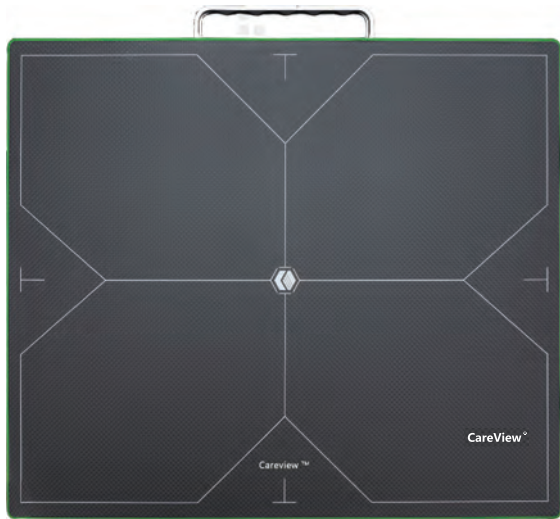
500P 8X10"

CareRay's Battery Saving, Wireless 'Touch-n-Shoot Trigger Top'

Careray's Touch-n-Shoot Trigger Top fits over your existing trigger switch and creates a wireless, remote wake-up function for your CareRay wireless panel.

When you are not using the panel, the Touch-n-Shoot Trigger Top will put it to sleep.

The battery life of your wireless detector is extended up to about 3 days or 1,400 near continuous x-ray shots between charges.



1500Cw 14x17" wireless



Touch-n-Shoot Trigger Top

CareRay's CsI Direct-Deposit Technology



At CareRay we don't buy CsI plates and glue them in. We employ our own in-house CsI Direct-Deposition process by growing caesium iodide crystals and directly depositing them on glass substrate.

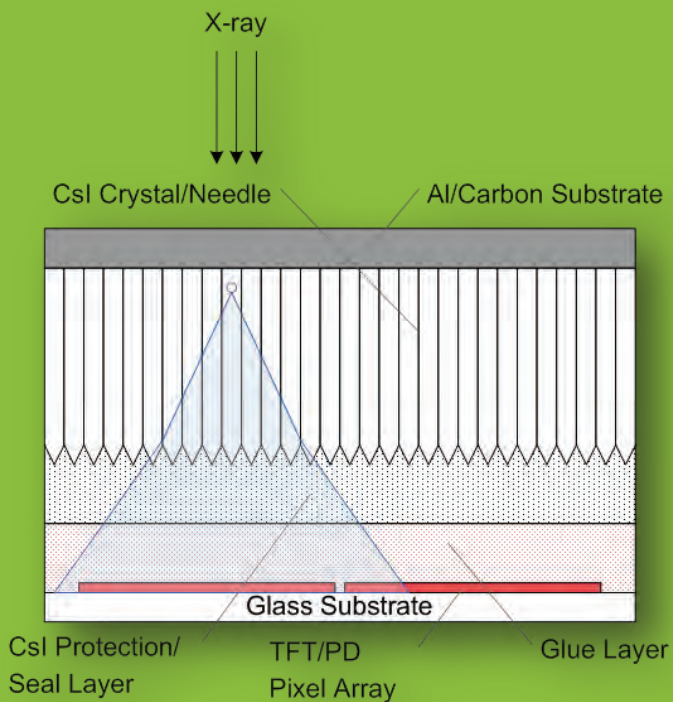
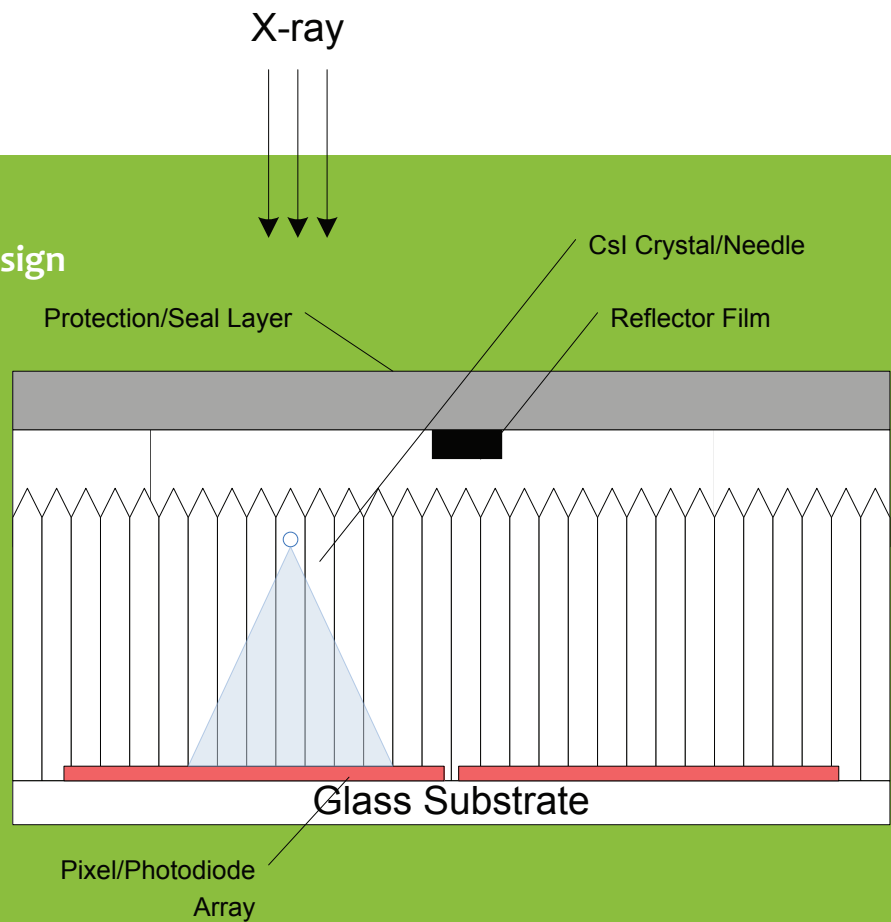
What are the benefits of CareRay's CsI Direct-Deposit Technology ?

- **Least** amount of isotropic photon lateral scattering which means the best resolution (MTF)
- **Lowest** photon coupling loss which means best quantum efficiency (QE) and detector quantum efficiency (DQE)
- **No glue** which means most reliable long-term performance with superior long-term stability and ambient compatibility
- **A robust**, long lasting detector



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CareRay Direct-Deposit CsI design



Common CsI Plate design (glued)

What do other detectors struggle with ?

- Isotropic photon scatter, particularly in the glue layer, resulting in poor image resolution
- Poor photon coupling to the photo diode, resulting in resolution degradation
- Fragile glue processes susceptible to defects (air bubble, unevenness, moisture), resulting in reliability and longevity problems

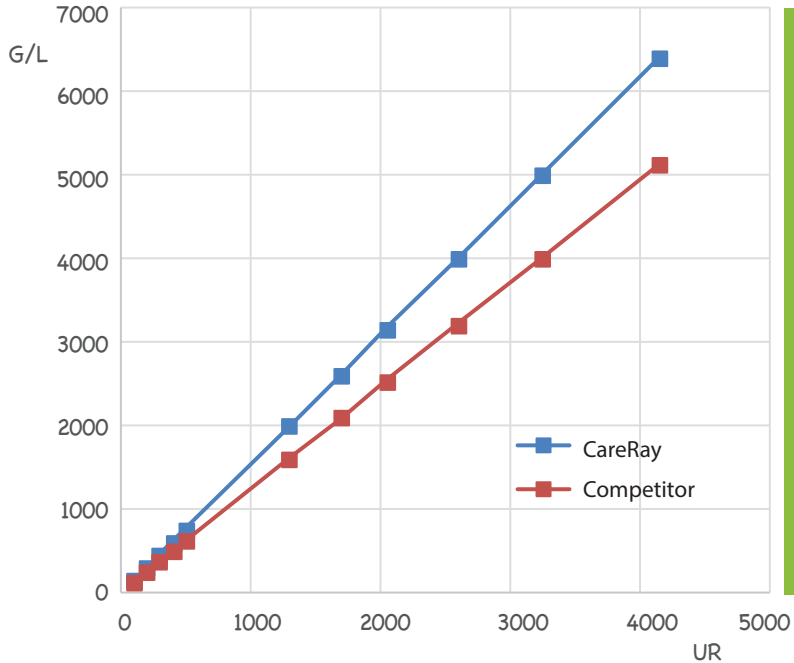




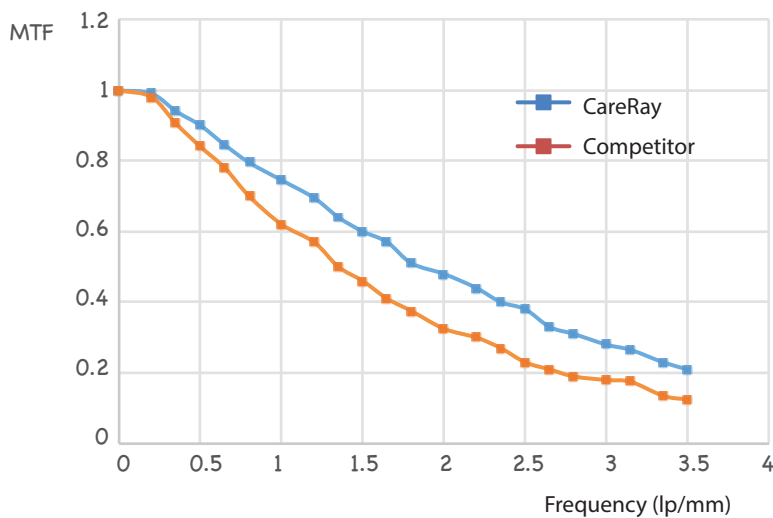
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CareRay Direct Deposit Csl Comparison to Sample Competitor

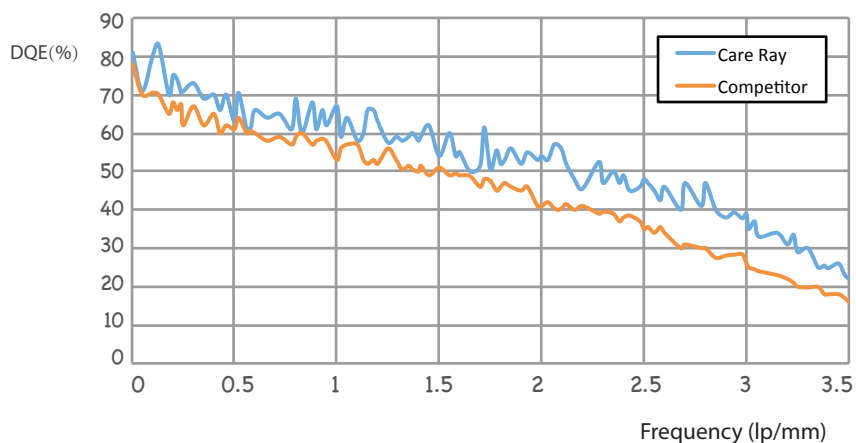
Identical TFT/PD panel with 142 um pitch - Identical Readout/Digital processing - independent 3rd party results



CareRay 25% Higher Sensitivity !



CareRay 70% Better Resolution !



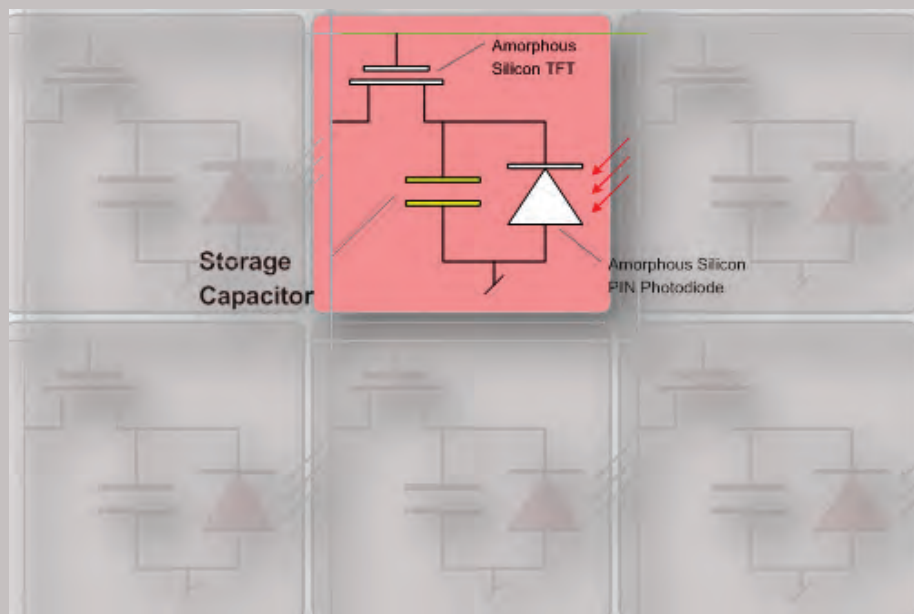
**CareRay 30% Higher
DQE !**

CareRay's High Dynamic Range (HDR) Advantage

Traditionally, when pixel pitch is shrunk, a sensor's dynamic range is compromised due to reduced charge capacity. This is what CareRay's competitors face.

CareRay has developed an advanced passive sensor design and a-Si process technology, incorporating CareRay's patented device design for TFT, PD, and Storage Capacitor. The results have been amazing !

Some of our small pixel detector series have dynamic ranges that are 3 times that of other detectors on the market.

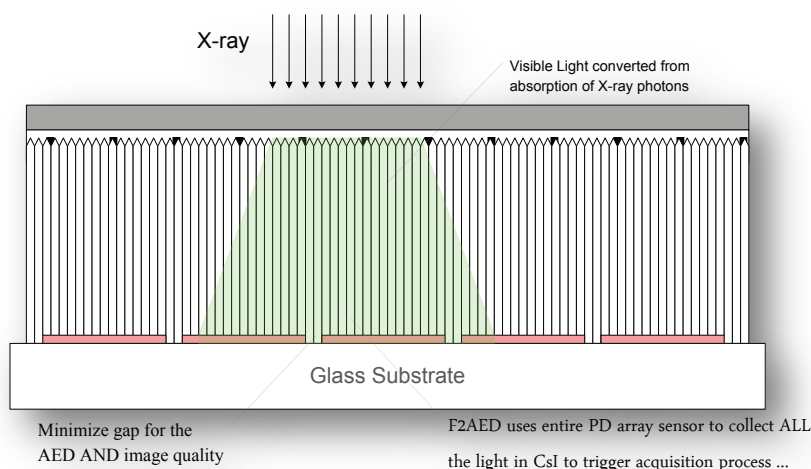


CareRay's Unique Full-Field Auto-Exposure Detection (F²AED)

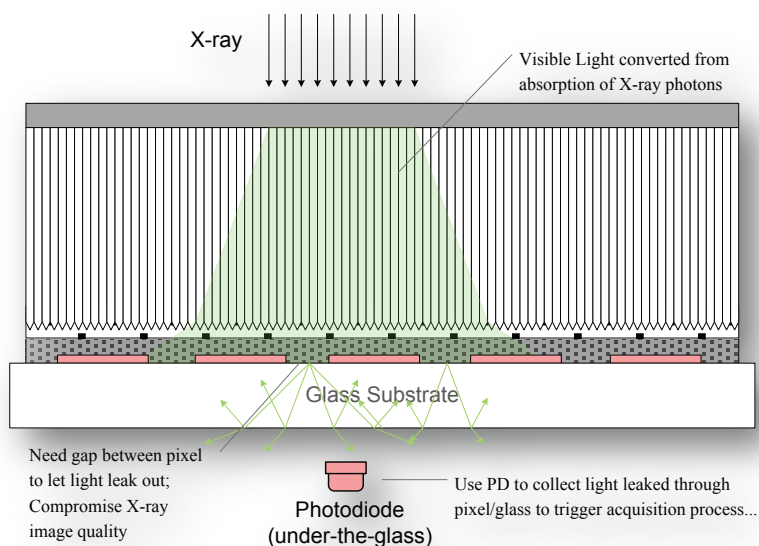
CareRay's patented F²AED technology uses the entire photodiode array sensor on the surface of the glass substrate to collect light to trigger the acquisition process.

Many other manufacturers offering AED need to place gaps between their pixels to purposely let light through to trigger their AED photodiodes which are placed under the glass substrate. They have to incorporate in their panel design an inherent conflict between AED design and optimum imaging. Not so with CareRay !

CareRay's F²AED technology means no blind areas on the detector as the entire sensor is used for AED. This provides reliability and sensitivity even when the x-ray dose is low. It also means optimum imaging as we don't need to increase the gap between pixels.



CareRay's F²AED means NO COMPROMISE, NO BLIND AREAS, NO LOW SENSITIVITY ISSUES.



Common AED configuration means other panels can perform unreliably, have blind areas and low sensitivity



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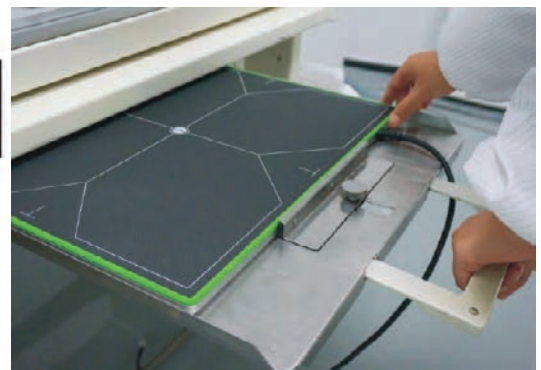
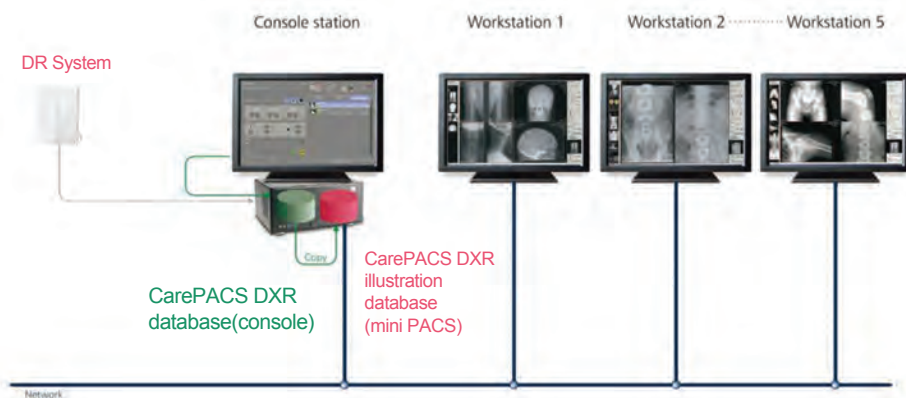
CareView® series of digital flat panel detectors

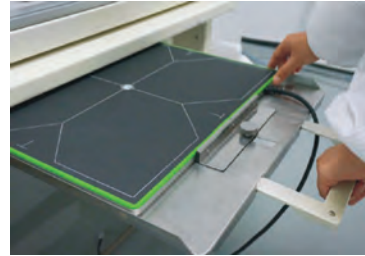
CareView® series X-ray flat panel detectors incorporate the proven technology of amorphous silicon. The amorphous silicon photodiode array and TFT underneath convert invisible X-ray photons into visible photons, and then into electric charges. The electron signals are measured and amplified in the data line, and then converted to digital signals by the Analog/Digital converter. Finally, the digital signals are transmitted to a PC for processing to form an image.

High DQE, high spatial resolution, extraordinary dynamic range and ultra-low noise are hallmarks of our CareView® series.

Each Careview detector is submitted for FDA, CE and CFDA approval.

CareView® detectors are integrated with CarePACS DXR software, which is an acquisition-viewing combination and supports up to 5 shared viewers and unlimited hosts. Network PACS and Enterprise PACS options are available. CarePACS DXR software is for both veterinary and medical professionals and is imbedded with convenient instructional pictures and video clips on x-ray procedures and sample images.





14" x 17" Multi - purpose Radiography Detector

The 14" x 17" multi-purpose Careview 1500L detector meets a wide range of requirements for digital radiography applications. (eg. Integration with new fixed-mounted systems, retrofit of existing systems – CCD, DR, CR, film). Multiple synchronization modes provide universal flexibility for system manufacturers and integrators.

The low power consumption, thermal-efficient design and one-cable connection make it easy to install and operate. Optional F²AED[®] to eliminate wiring to the generator. Careview 1500L is a perfect combination of robust performance and affordability.

Sensor	
Scintillator	CsI Direct Deposit
Active Area	434 x 355mm
Pixel Array	2816X2304
Pixel Pitch	154µm
Image Quality	
Limiting Resolution	3.3lp/mm
MTF	> 70%(@ 1 lp/mm)
	> 40%(@ 2 lp/mm)
	> 22%(@ 3 lp/mm)
DQE	> 65%(@ 0 lp/mm)
	> 20%(@ 3 lp/mm)
Sensitivity	~0.62ct/nGy
Maximum Linear Dose	95µGy
Dynamic Range	> 82 dB
Greyscale	16 bits
Communication Interface	
Communication Interface	Gigabit Ethernet
Image Acquisition Time	2-3s
Exposure Control	F ² AED (Optional)
	Manual
	External Trigger

Environmental	
Operating	Natural Cooling
-Temperature Range	5°C-35°C
-Humidity Range (Non-condensing)	30%-75%RH
Storage	
-Temperature Range	-20°C-55°C
-Humidity Range	10%-90%RH
Mechanical	
Dimension	384×460×15mm
Weight	3.4Kg
Housing Material	Carbon fiber front High Strength aluminium alloy back
Power	
Power Dissipation	8W (standby) /20W (operating)
Power Supply	100-240V AC
Frequency	50/60Hz

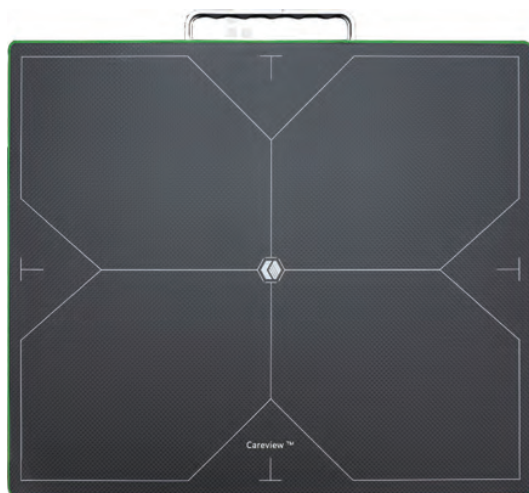


14" x 17" Tethered Detector

The 14" x 17" Careview 1500C is a tethered cassette-sized detector that easily fits into standard bucky trays and is ideal for system upgrades. Lightweight and slim design, with an award winning (Italy) foldable handle, rubber insulated frame and high strength aluminum alloy case ensures safe and convenient moves. F²AED® eliminates wiring to the generator.

Sensor	
Scintillator	CsI Direct Deposit
Active Area	434x355mm
Pixel Array	2816X2304
Pixel Pitch	154µm
Image Quality	
Limiting Resolution	3.3lp/mm
MTF	~ 70%(@ 1 lp/mm)
	~ 40%(@ 2 lp/mm)
	~ 22%(@ 3 lp/mm)
DQE	(@RQA5, 27µGy)
	~65% (@ 0 lp/mm)
	~20% (@ 3 lp/mm)
Sensitivity	~0.62ct/nGy
Response Non-linearity	< ± 0.5%
Maximum Linear Dose	95µGy
Dark Noise	~8 nGy
Dynamic Range	~82 dB
Greyscale	16 bits
Communication Interface	
Image Acquisition Time	2-3s
Exposure Control	F ² AED
	Manual

Communication Interface	Gigabit Ethernet
Environmental	
Operating	Natural Cooling
-Temperature Range	5°C-35°C
-Humidity Range (Non-condensing)	30%-75%RH
Storage	
-Temperature Range	-20°C-55°C
-Humidity Range	10%-90%RH
Mechanical	
Dimension	460x384x15mm
Weight	3.3Kg
Housing Material	Carbon fiber front
	High Strength aluminium alloy back
Power	
Power Dissipation	<8W(standby) / 20W(operating)
Power Supply	100-240V AC
Frequency	50/60Hz



14" x 17" Cassette-size Wireless Detector

The 14" x 17" Careview 1500Cw wireless cassette-sized detector easily fits into standard bucky tray cabinets for upgrading a film or CR system to a flat panel DR system. Lightweight, slim design with award winning (Italy) built-in foldable handle, rubber insulated frame and high strength aluminum-alloy case ensure safe and convenient operation and moves. F²AED[®] eliminates wiring to the generator.

Dual-band wireless acquisition and transfer of a full resolution image in ~4 seconds. Extra-long battery life. Optional Touch-n-Shoot Trigger Top to extend battery life further. Standard Gigabit Ethernet port for optional wired operation.

Sensor	
Scintillator	CsI Direct Deposit
Active Area	434x355mm
Pixel Array	2816X2304
Pixel Pitch	154µm
Image Quality	
Limiting Resolution	3.3lp/mm
MTF	~70%(@ 1 lp/mm)
	~ 40%(@ 2 lp/mm)
	~ 22%(@ 3 lp/mm)
DQE	(@RQA5, 27µGy)
	~65% (@ 0 lp/mm)
	~20% (@ 3 lp/mm)
Sensitivity	~0.62ct/nGy
Response Non-linearity	< ± 0.5%
Maximum Linear Dose	95µGy
Dark Noise	~8 nGy
Dynamic Range	~82 dB
Greyscale	16 bits
Communication Interface	
Communication Interface	Gigabit Ethernet 2.4/5GHz, 300Mbps
Image Acquisition Time	2-3s (wired) 4-5s (wireless)

Exposure Control	F ² AED Manual
Environmental	
Operating	Natural Cooling
-Temperature Range	5°C-35°C
-Humidity Range (Non-condensing)	30%-75%RH
Storage	
-Temperature Range	-20°C-55°C
-Humidity Range	10%-90%RH
Mechanical	
Dimension	460x384x15mm
Weight	3.7Kg
Housing Material	Carbon fiber front High Strength aluminium alloy back
Power	
Power Dissipation	<8W(standby) / 20W(operating)
Power Supply	100-240V AC
Frequency	50/60Hz



14"x 17" Wireless Detector

CareView 1500P 14"x17" portable dual band wireless detector completes its image acquisition cycle within 5 seconds. Outstanding battery capacity and advanced CsI direct-deposition technology ensures excellent imaging at low X-ray dosages. Aluminum-alloy uni-body enclosure with Impact-absorption rubber edge and water-resistant seals supports using the detector in challenging environments. Gigabit Ethernet port for optional wired operation.

Sensor	
Scintillator	Direct Deposit CsI
Pixel Area	434 x 355mm
Pixel Array	2816X2304
Pixel Pitch	154µm
Imaging Performance	
Limiting Resolution	3.3lp/mm
MTF	> 70%(@ 1 lp/mm)
	> 40%(@ 2 lp/mm)
	> 22%(@ 3 lp/mm)
DQE	(@RQA5,30µGy)
	~ 65%(@ 0 lp/mm)
	~ 20%(@ 3 lp/mm)
Sensitivity	~0.62ct/nGy
Response Non-linearity	< ± 0.5%
Maximum Linear Dose	95 µGy
Dark Noise	~ 8 nGy
Dynamic Range	~ 82dB
Greyscale	16 bits
Communications	
Communication Interface	GbitE 2.4/5GHz, 300Mbps
Image Acquisition Time	2-3s (wired)
	4-5s (wireless)

Exposure Control	F²AED (optional) Manual
Environmental	
Operating	Natural Cooling
-Temperature Range	5°C-35°C
-Humidity Range (Non-condensing)	30%-75%RH
Storage	
-Temperature Range	-20°C-55°C
-Humidity Range	10%-90%RH
Mechanical	
External Dimension	477.4x453.6x18.4mm ³
Weight	4Kg
Housing Material	carbon fiber front & High Strength Aluminium alloy back
Power	
Power Dissipation	<8W(standby) / 24W (operating)
Power Supply	100-240V AC
Frequency	50/60Hz



17"x17" Cassette-size Radiography Detector

The cassette-sized, tethered, lightweight 17"x17" Careview 1800L is designed for a variety of applications such as integrating with a system which requires a detector to be used in multiple positions or upgrading an existing cassette-based film or CR system to a flat panel DR. Optional F²AED® eliminates wiring to the generator.

Sensor	
Scintillator	CsI Direct Deposit
Active Area	434x434mm
Pixel Array	2816X2816
Pixel Pitch	154µm
Image Quality	
Limiting Resolution	3.3lp/mm
MTF	~ 70%(@ 1 lp/mm)
	~ 40%(@ 2 lp/mm)
	~ 22%(@ 3 lp/mm)
DQE	(@RQA5, 30µGy)
	~62% (@ 0 lp/mm)
	~20% (@ 3 lp/mm)
Sensitivity	~0.62ct/nGy
Response Non-linearity	< ± 0.5%
Maximum Linear Dose	95µGy
Dark Noise	~8 nGy
Dynamic Range	~82 dB
Greyscale	16 bits
Communication Interface	
Communication Interface	Gigabit Ethernet
Image Acquisition Time	2-3s

Exposure Control	F²AED (optional)
	Manual
	External Trigger
Environmental	
Operating	Natural Cooling
-Temperature Range	5°C-35°C
-Humidity Range (Non-condensing)	30%-75%RH
Storage	
-Temperature Range	-20°C-55°C
-Humidity Range	10%-90%RH
Mechanical	
Dimension	460x460x15mm
Weight	3.9Kg
Housing Material	Carbon fiber front
	High Strength aluminium alloy back
Power	
Power Dissipation	<8W(standby) / 20W(operating)
Power Supply	100-240V AC
Frequency	50/60Hz



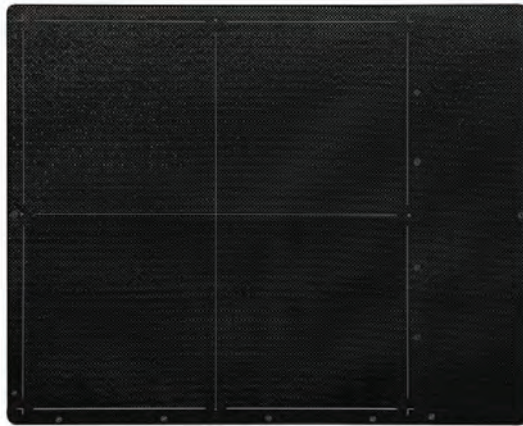
17" x 17" Full Size Fixed-mounted Flat-panel Radiography Detector

CareView® 1800R, a 17"x17" fixed-mount detector, is ideal for a broad range of applications including medical diagnostic imaging, industrial non-destructive testing and security inspections.

Combined with the thick CsI film on TFT/PD panel and optimized low system noise performance, the detector is capable of acquiring high quality radiography images even in the toughest exposure conditions. 3-in-1 cable for power, network and synchronization makes installation easy.

Sensor	
Scintillator	CsI Direct Deposit
Active Area	434x434mm
Pixel Array	2816x2816
Pixel Pitch	154µm
Image Quality	
Limiting Resolution	3.3lp/mm
MTF	> 70%(@ 1 lp/mm)
	> 40%(@ 2 lp/mm)
	> 22%(@3 lp/mm)
DQE	(@RQA5, 20µGy)
	>65% (@ 0 lp/mm)
	>20% (@ 3 lp/mm)
Sensitivity	~0.62ct/nGy
Response Non-linearity	< ± 0.5%
Maximum Linear Dose	>95µGy
Dark Noise	~8nGy
Dynamic Range	~ 82dB
Greyscale	16 bits
Communication Interface	
Image Acquisition Time	2-3s
Exposure Control	External Trigger
	Manual

Communication Interface	Gigabit Ethernet
Environmental	
Operating	Natural Cooling
-Temperature Range	5°C-35
-Humidity Range (Non-condensing)	30%-75%RH
Storage	
-Temperature Range	-20°C-55°C
-Humidity Range	10%-90%RH
Mechanical	
Dimension	492x492x33.50mm
Weight	10Kg
Housing Material	Carbon fiber front
	Anodized aluminium alloy back
Power	
Power Dissipation	<8W(standby) / 20W(operating)
Power Supply	100-240V AC
Frequency	50/60Hz

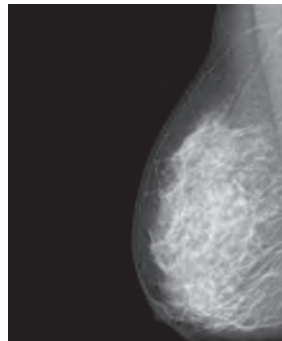
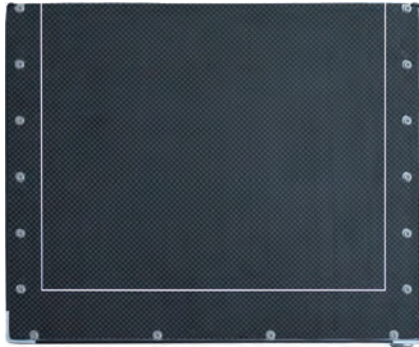


17" x 17" Full Size Fixed-mounted Radiography Detector

Our CareView[®] 1800i, 17"x17" industrial-use detector.

Sensor	
Scintillator	CsI Disect Deposit
Active Area	433.7x433.7mm
Pixel Array	2816X2816
Pixel Pitch	154μm
Image Quality	
Limiting Resolution	> 3.7 lp (1X1) > 2.0 lp (2X2 binning mode)
Dynamic Range	16 bits
Energy	10keV~8MeV
Communication Interface	
Communication Interface	Gigabit Ethernet
Image Acquisition Time	1~2s
Exposure Control	External Trigger Manual

Environmental	
Operating	
Temperature Range	5-35 °C
Humidity Range (Non-condensing)	30%-75%RH
Storage	
Temperature Range	-20 °C -55 °C
Humidity Range	10%-90% RH
Mechanical	
Dimension	589.1X470.7X29.2
Weight	~15Kg
Housing Material	Aluminium alloy back
Power	
Power Dissipation	<20W
Power Supply	100-240V AC
Frequency	50/60Hz



8" x 10" Mammography Detector

CareView[®] 500M, a 8"x10" flat-panel mammography detector with 77µm pixel pitch, is optimized for best-in-class image quality and built for affordability minded system integrators and manufacturers.

Using CareRay's patented sophisticated storage-capacitor pixel design, combined with advanced fabrication techniques, CareView[®] 500M overcomes the challenge common to sensors with small pixel pitch, which is the rapid drop of dynamic range as pixel pitch decreases.

CareView[®] 500M maintains extraordinary dynamic range (> 12000:1) without compromising critical performance in sensitivity, spatial resolution and other essential imaging attributes.

The most advanced CsI direct-deposition technology ensures excellent image quality at a low X-ray dose and improves operational safety.

Sensor	
Scintillator	CsI Direct Deposit
Active Area	236x196.5mm
Pixel Array	3072x2560
Pixel Pitch	77µm
Image Quality	
Limiting Resolution	6.49lp/mm
MTF	> 44%(@ 4 lp/mm)
	> 26%(@ 6 lp/mm)
DQE	(28Kv, 0.5mGy, Mo/Mo)
	~27%.....(@ 4 lp/mm)
Sensitivity	~10ct/µGy.....Gain 1
	~20ct/µGy.....Gain 2
Response Non-linearity	< ± 0.8%
Maximum Linear Dose	~5mGy.....Gain 1
	~2.5mGy.....Gain 2
Dark Noise	~3.5 (~0.35µGy @ Gain1)
Dynamic Range	~80dB.....Gain 1
	~76dB.....Gain 2
Greyscale	16 bits

Communication Interface	
Communication Interface	Gigabit Ethernet
Image Acquisition Time	1-3s
Exposure Control	External Trigger
Environmental	
Operating	Natural Cooling
-Temperature Range	5°C-35°C
-Humidity Range (Non-condensing)	10%-90%RH
Storage	
-Temperature Range	-10°C-55°C
-Humidity Range	10%-90%RH
Mechanical	
Dimension	290x238.5x30.8mm
Weight	2.86Kg
Housing Material	Carbon fiber front
	Anodized aluminium alloy back
Power	
Power Dissipation	40W(operating)
Power Supply	100-250V AC
Frequency	50/60Hz



8"x 10" Portable Wireless Detector

CareView 500P portable wireless detector with 77um pixel pitch suits a variety of applications, including veterinary and industrial. Superior performance and light-weight portable design make CareView 500P an attractive imaging device.

Sensor	
Scintillator	CsI Direct Deposit
Active Area	238 x 198 mm
Pixel Array	3072 x 2560 @ RAD Mode 1536 x 1280 @ Binning Mode
Pixel Pitch	77µm
Image Quality	
Limiting Resolution	6.49lp/mm
MTF	> 65%(@ 1 lp/mm) > 35%(@ 3 lp/mm)
Sensitivity	0.18 ct/nGy 3072 x 2560 @ RAD Mode.or. 1536 x 1280 @ Binning Mode.or. 2304 x 1920 @ Mapping Mode
Response Non-linearity	< ± 1.3%
Maximum Linear Dose	> 300µGyGain 4
Dark Noise	11nGy
Dynamic Range	76dBGain 4
Greyscale	16 bits
Communication Interface	
Communication Interface	Gigabit Ethernet 2.4/5GHz, 300Mbps

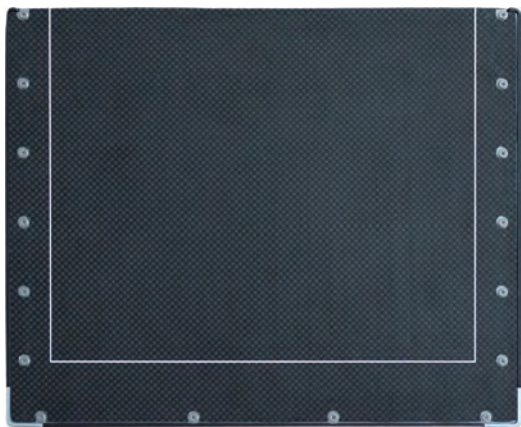
Image Acquisition Time	4-5s
Exposure Control	External Trigger
	Manual F²AED
Environmental	
Operating	Natural Cooling
-Temperature Range	5°C-35°C
-Humidity Range (Non-condensing)	10%-90%RH
Storage	
-Temperature Range	-10°C-55°C
-Humidity Range	10%-90%RH
Mechanical	
Dimension	290x308.56x31.70mm
Weight	3.4Kg
Housing Material	Carbon fiber front
Power	
Power Dissipation	8W (standby)/40W(operating)
Power Supply	100-250V AC
Frequency	50/60Hz



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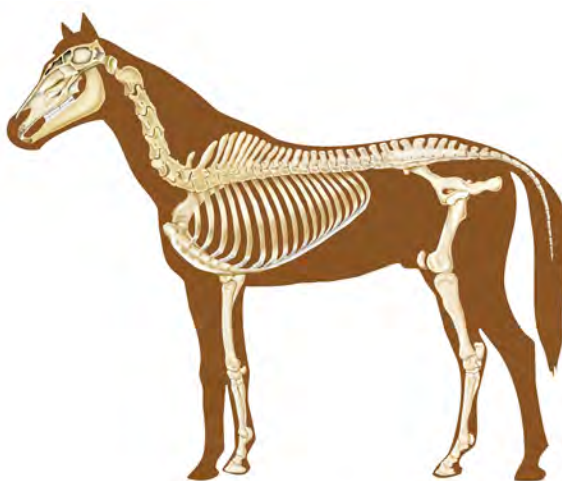
Coming Next

CareView[®] 750M



750M 10"x12" Mammography

CareView[®] 750P



750P 10"x12" Portable Wireless



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1500Cw 14" x17" wireless



NEW



Touch-n-Shoot Trigger Top

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