

Helios10 MD X-Ray Panel

DATASHEET



Key Features

- Large active image area of 8x10" in a lightweight, portable panel
- Superior resolution of 5.2 lp/mm; over 5 million pixels on 96 μm centers
- State-of-the-art GigE interface connects to laptop or PC
- Low noise active pixel CMOS and 14-bit digitization
- Rugged molded plastic housing with built-in handle is ready for clinical environments
- Ready-to-run software and drivers

Overview

The Helios™ family of CMOS x-ray panels represent a paradigm shift for the company in bringing to market large area panels manufactured as standard products specifically targeting the medical imaging market. Rad-icon's Helios10 MD panel was designed to exceed the rigorous imaging requirements for a wide variety of medical imaging applications, such as tissue biopsy, full-field digital mammography, general radiography, and bone densitometry.

With an active area of 20 x 25 cm, the Helios10 MD is the first CMOS x-ray panel in the market of this size and form factor, a medical-grade cassette package with an integrated handle. The Helios10 MD offers technical innovations such as 96 micron pixel size, low read noise which translates into 78 db dynamic range, and an optional Ethernet fiber optic interface for improved electrical isolation and patient safety.

For over 10 years, Rad-icon has been providing medical imaging OEM customers with the latest x-ray imaging technology that delivers the highest performance at a cost-efficient price. The company specializes in the design, development, and manufacture of standard and semi-custom x-ray sensors and cameras. Our goal is to work with OEM customers to jointly create superior medical imaging solutions that are distinguished against the competition. Rad-icon offers comprehensive consultations and direct access to technologists who have in-depth knowledge of custom application integration. Our technical experts are available to provide customized solutions for various applications.



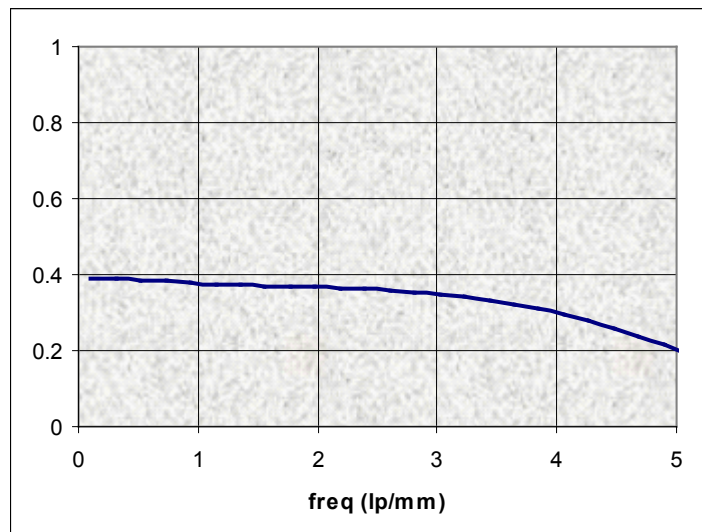
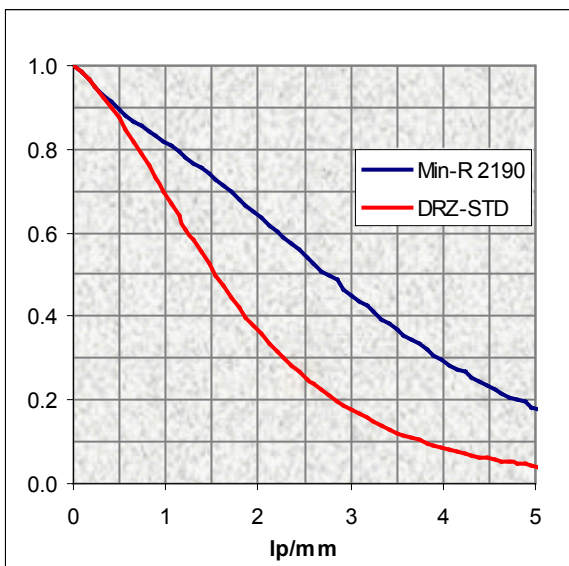
Description

The Helios x-ray panel marks a ground-breaking milestone in the Rad-icon portfolio of digital x-ray sensors and cameras. Based on Rad-icon's proprietary Very Large Area (VLA) CMOS technology, the Helios10 MD features a large active imaging area of 20x25 cm while maintaining superb image resolution with a pixel size of only 96 μm . The active-pixel CMOS photodiode array at the core of the panel consists of over five million individual pixels that convert light emitted by the integrated scintillator screen into electrical signal. The panel's low-noise, 14-bit digital output produces crisp, sharp images ideal for medical radiography applications.

The Helios10 MD is packaged in a custom-molded housing with a slim cassette form factor and integrated handle. Designed with portable imaging applications in mind, it weighs less than 3 kg and is easily positioned using just one hand. A cable tether connects the Helios to a laptop or PC via standard gigabit Ethernet or an optional fiber-optic interface. Less than 10 Watts of power consumption enable the panel to run off a standard AC power adapter or even a battery pack.

Resolution & Sensitivity

The intrinsic resolution of the detector within the Helios10 MD panel is determined by the pixel size of the sensor. The DQE curve below was measured for a 28 kVp W spectrum at a dose level of 100 μGy , using a Kodak Min-R 2190 scintillator.



Resolution & Sensitivity (continued)

The actual Modulation Transfer Function (MTF) for various scintillator options is shown in the chart on the previous page. Please refer to our application note AN07 for more information on scintillator performance and tradeoffs.

Scintillator	MTF	Typical Sensitivity
Min-R 2190	82% at 1 lp/mm 46% at 3 lp/mm	390 ADU/mR @ 35kVp 420 ADU/mR @ 50kVp
DRZ-Std	70% at 1 lp/mm 18% at 3 lp/mm	850 ADU/mR @ 35kVp 1020 ADU/mR @ 50kVp

Helios10 MD Camera Specifications

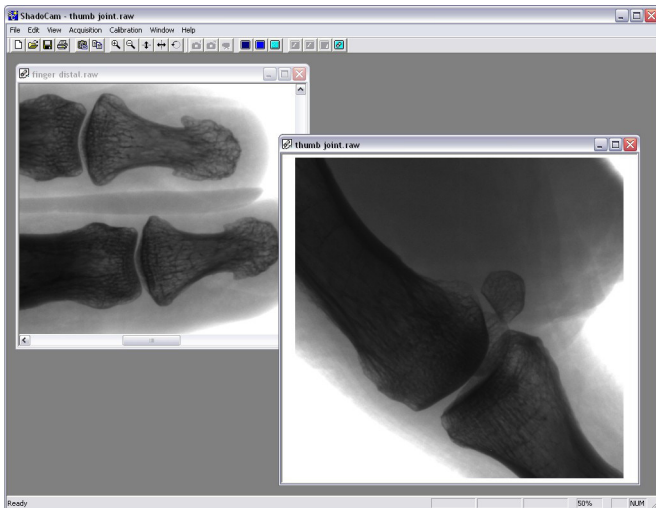
	Minimum	Typical	Maximum	Units
Resolution		2000x2560		pixels
Active Area		192x246		mm
Pixel Pitch		96		µm
Dark Current (23°C) ⁽¹⁾		60		ADU/s ⁽²⁾
Read Noise (rms, at 1 fps)		2		ADU
Dynamic Range		78		dB
Conversion Gain ⁽³⁾		350		elec/ADU
Frame Rate	0.05		1.4	fps
Supply Voltage	6.0	6.5	8.0	V
Supply Current			750	mA
Power Dissipation		<10		W
Operating Temperature	0		50	°C
Humidity (non-condensing)	10		80	% R.H.
Dimensions (LxWxH)		355x285x24		mm
Weight		3.0		kg

(1) Dark current doubles approx. every 8°C

(2) ADU = Analog-Digital Unit = 1 LSB (Least Significant Bit)

(3) High-gain option (2x) available

ShadoCam Imaging Software



The ShadoCam Imaging Software is available free of charge to help you get up and running quickly with your Helios10 MD panel. ShadoCam provides basic imaging functionality such as image acquisition and display, offset and flat-field corrections, image statistics, printing and file I/O. Images are displayed and stored in 16-bit integer format to preserve the full dynamic range of the camera. You can export image bitmaps via the clipboard or in various formats for use in other applications. Please go to our website to get the latest ShadoCam version, which includes full

support for our Shad-o-Box, Shad-o-Snap, SkiaGraph and Remote RadEye cameras. In addition, Rad-icon offers the ShadoCam Imaging Library (SIL) which is a Windows DLL that allows you to link ShadoCam image processing functions into your own application. The SIL consists of a set of function calls that duplicate portions of Rad-icon's ShadoCam Imaging Software application. These functions allow you to perform the same image calibrations that ShadoCam uses, in order to achieve the best possible image quality from your camera. For detailed information please refer to the SIL Data Sheet and User's Manual available on Rad-icon's corporate website at <http://www.rad-icon.com/products-software.php>

About Rad-icon

Rad-icon Imaging (Sunnyvale, CA), a division of DALSA Corporation (Waterloo, Ontario), is a leading provider of high-performance CMOS image sensors and cameras for the digital radiography market worldwide. Rad-icon Imaging's products enable medical practitioners, industrial manufacturers, and scientific researchers to create superior image quality, high resolution, and large active area images based on our CMOS active pixel sensor (APS) technology. Rad-icon's products address diverse applications such as tissue biopsy, non-destructive testing, circuit board testing, and x-ray crystallography. Rad-icon Imaging's customers are able to implement cost-effective and high-performance digital imaging solutions. For more information, please visit our website at <http://www.rad-icon.com> or call (408) 736-6000.