

Shad-o-Box 1280 HS

High-Speed Industrial X-Ray Camera



Key Features:

- CMOS x-ray sensor technology
- Active area of 12.8 x 12.8 cm (5")
- 1.6 Mpixel resolution at 30 fps
- 14-bit digital image quality
- Unmatched sensitivity & resolution
- Real-time GigE interface

Rad-icon's Shad-o-Box 1280 HS x-ray camera is the industry's first standard product CMOS detector designed from the ground-up for CT (computed tomography) imaging.

X-ray CT applications will now benefit from 30fps frame rates at full resolution combined with exceptionally low noise and an almost complete elimination of image artifacts. The Shad-o-Box 1280 HS can also be operated in 2x2 binning mode for even faster real-time NDT and scientific applications.

Detector Specifications		Units
Number of active rows	1280	pixels
Number of columns	1280	pixels
Active area height	128	mm
Active area width	128	mm
Pixel spacing (pitch)	100	µm
Pixel fill factor	>85	%
Typ. dark current (23°C) ⁽¹⁾	12	ADU/s ⁽²⁾
Read noise (rms)	5-6	ADU
Dynamic range	3000:1	
Digitization	14	bits
Image lag	<0.1	%
Typical non-linearity	1.5	%
Readout period ⁽³⁾	32	ms
Max. frame rate (full res.)	30	Hz
Max. frame rate (2x2 binned)	60	Hz
Output data rate	30	MHz

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

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

⁽³⁾ time required to transfer image from sensor to camera memory

Camera Specifications		Units
Typical supply voltage	12 (±1)	Volts
Maximum supply current	1000	mA
Typical power dissipation	< 10	Watts
Data interface	GigE	
Trigger interface	TTL	

General Specifications		Units
Operating Temperature	0 to 40	°C
Storage Temperature	-10 to +55	°C
Humidity (non-condensing)	10 to 80	% R.H.
Weight	3.1	kg

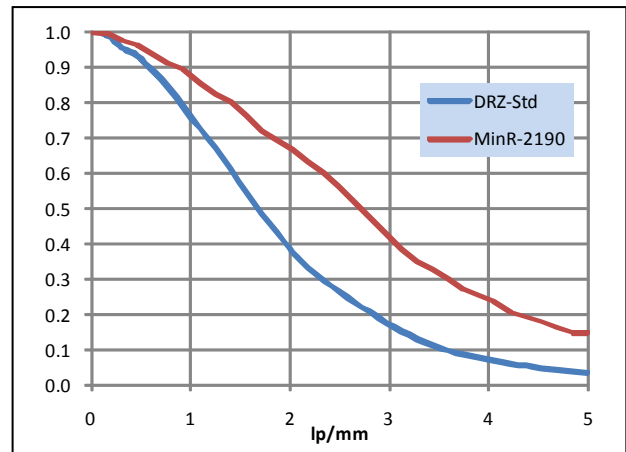
Resolution & Sensitivity:

The Shad-o-Box 1280 HS is designed to work with x-ray sources operating from 40 to 120 kVp. X-ray energies as low as 15 keV can be detected. We strongly recommend the use of additional shielding at higher energies in order to protect the sensor element from damage.

The detector features a pixel spacing of 100 μm , which corresponds to a limiting resolution of 5 line pairs per mm. The actual Modulation Transfer Function (MTF) of the detector depends on the type of scintillator that is installed. A thicker phosphor screen will produce more signal, but at the expense of high-frequency contrast.

Scintillator	Typical Sensitivity ⁽¹⁾
Min-R 2190	4.1 ADU/ μR @ 50kVp 5.2 ADU/ μR @ 80kVp
DRZ-Std	10.5 ADU/ μR @ 50kVp 14.5 ADU/ μR @ 80kVp

⁽¹⁾W target, 2mm glass window, no filtration



Software:

The Shad-o-Box 1280 HS camera ships with Rad-icon's *ShadoCam Imaging Software* and our GigE-Vision driver. The software is compatible with Windows[®] XP, VISTA and Windows 7. Check with your sales representative for compatibility with earlier Windows versions or with the Linux operating system. A dedicated LAN adapter is highly recommended.

For writing custom applications to acquire images from the camera, we recommend using Teledyne DALSA's *Sapera LT SDK* or a suitable GigE Vision API.

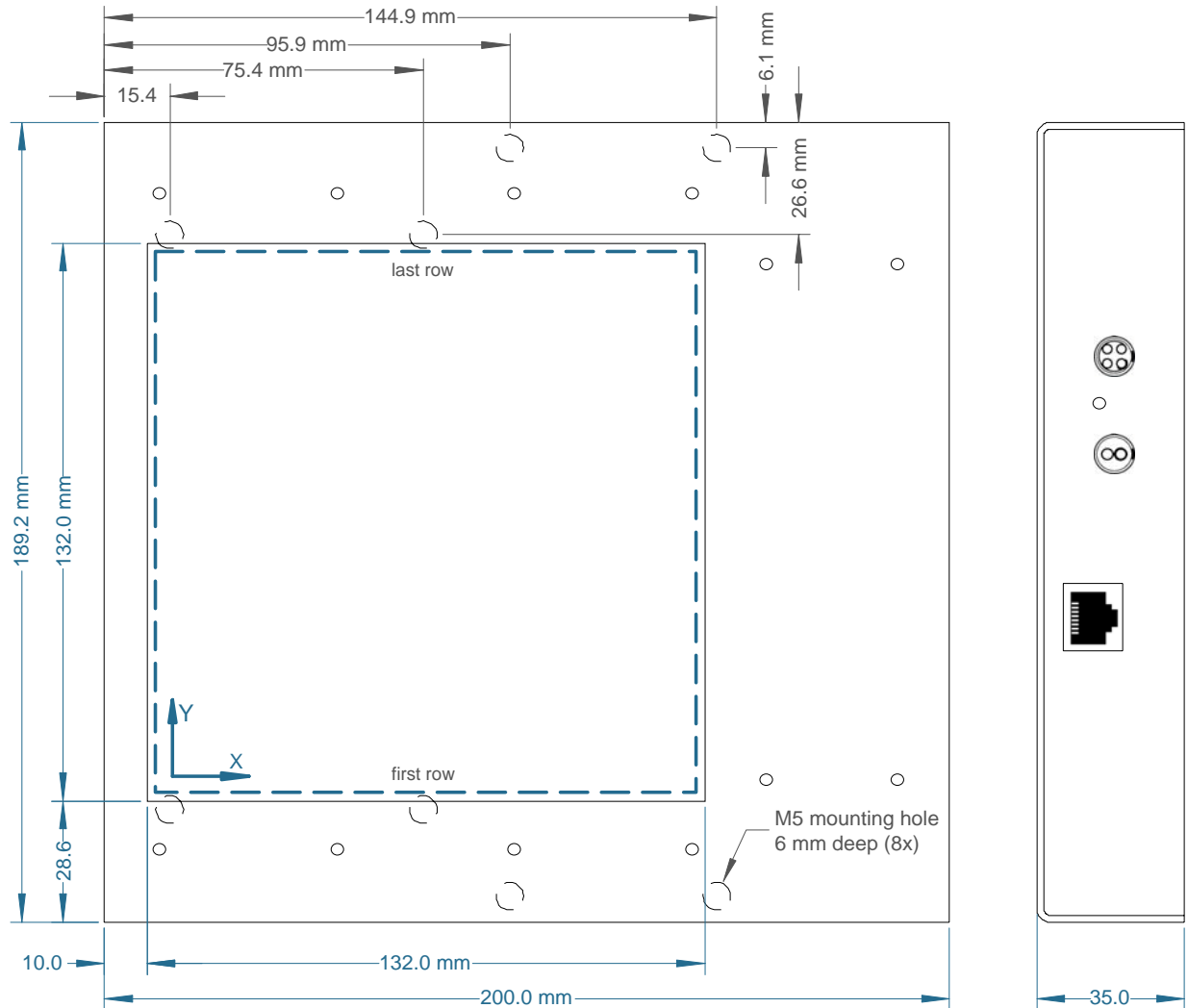
Ordering Information:

Shad-o-Box 1280 HS cameras are available in a single image quality grade, and can be ordered either with a Kodak Min-R[®] 2190 or a Mitsubishi Chemical DRZ-Std scintillator. Additional scintillator options may be available by request. All cameras ship with a universal input power supply (90-264V, 50-60Hz). For international orders, please specify the type of power cord you require.

P/N	Description
SB1350	Shad-o-Box 1280 HS Camera
-01	Min-R 2190
-02	DRZ Standard

Image Quality: up to 25 correctable line defects allowed

Mechanical Drawing:



Data Connector:

RJ45 HALO HFJ11-1G16E-L12RL

Power Connector:

2-pin LEMO EGG.0B.0302

Pin 1	+12 VDC
Pin 2	ground



Trigger I/O Connector:

4-pin LEMO EGG.0B.0304

TTL (open collector), opto-isolated

Pin 1	Trig out+
Pin 2	Trig out-
Pin 3	Trig in+
Pin 4	Trig in-

