

Shad-o-Box 3028 HS



Key Features:

- CMOS X-ray sensor technology
- Active area of 30 x 28 cm (12" x 11")
- 8.3 Mpixel resolution at 30 fps
- 14-bit digital image quality
- Unmatched sensitivity & resolution
- Real-time Camera Link (x2) interface

Applications:

- Digital radiography
- Industrial CT (Computed Tomography)
- Real-time inspection / Non-Destructive Testing
- X-ray analysis for mining & minerals

High-Speed Industrial X-Ray Camera

The Shad-o-Box 3028 HS X-ray camera is the industry's largest standard product CMOS detector designed for real-time X-ray imaging and featuring a tiled array of six identical CMOS image sensors.

X-ray CT applications will benefit from 30 fps frame rates at full resolution combined with exceptionally low noise and an almost complete elimination of image artifacts. The Shad-o-Box 3028 HS can also be operated in 2x2 binning mode for even faster real-time NDT and scientific applications.

Detector Specifications

Resolution	2952 x 2820 pixels
Data interface	CameraLink (Full)
Data/fps	8.3 Mpixel resolution at 30 fps
Power dissipation	30 Watt (typical)
Dimensions (LxWxH)	376 x 330 x 67 mm (14.8" x 13.0" x 2.6")
Weight	7.1 kg (15.7 lbs)
Number of active rows	2952 pixels
Number of columns	2820 pixels
Active area height	295 mm
Active area width	282 mm
Pixel spacing (pitch)	100 μ m
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⁾	22 ms
Max. frame rate (full res.)	30 Hz
Max. frame rate (2x2 binned)	60 Hz
Output data rate	40 MHz
Data connector:	CameraLink MDR-26 (2x)
Power connector:	Lemo B-series 2-pin
Trigger I/O connector:	Lemo B-series 8-pin

⁽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

Shad-o-Box 3028 HS

Camera Specifications		Units
Typical supply voltage	12-15	Volts
Maximum supply current	3000	mA
Typical power dissipation	< 30	Watts
Data interface	CameraLink (Full)	
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	7.1	kg

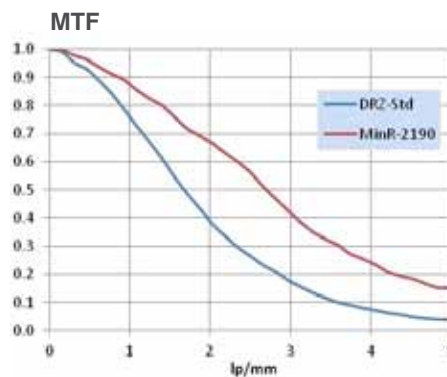
Resolution & Sensitivity:

The Shad-o-Box 3028 HS is designed to work with x-ray sources operating from 40 to 160 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 @ 50 kVp 5.2 ADU/ μR @ 80 kVp
DRZ-Std	10.5 ADU/ μR @ 50 kVp 14.5 ADU/ μR @ 80 kVp

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



Software:

The Shad-o-Box 3028 HS camera ships with Teledyne DALSA's CamExpert Software and drivers. 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 CameraLink frame grabber (for example, the Teledyne DALSA Xcelera-CL Full) is also required and sold separately.

For writing custom applications to acquire images from the camera, we recommend using Teledyne DALSA's Sopera LT SDK.

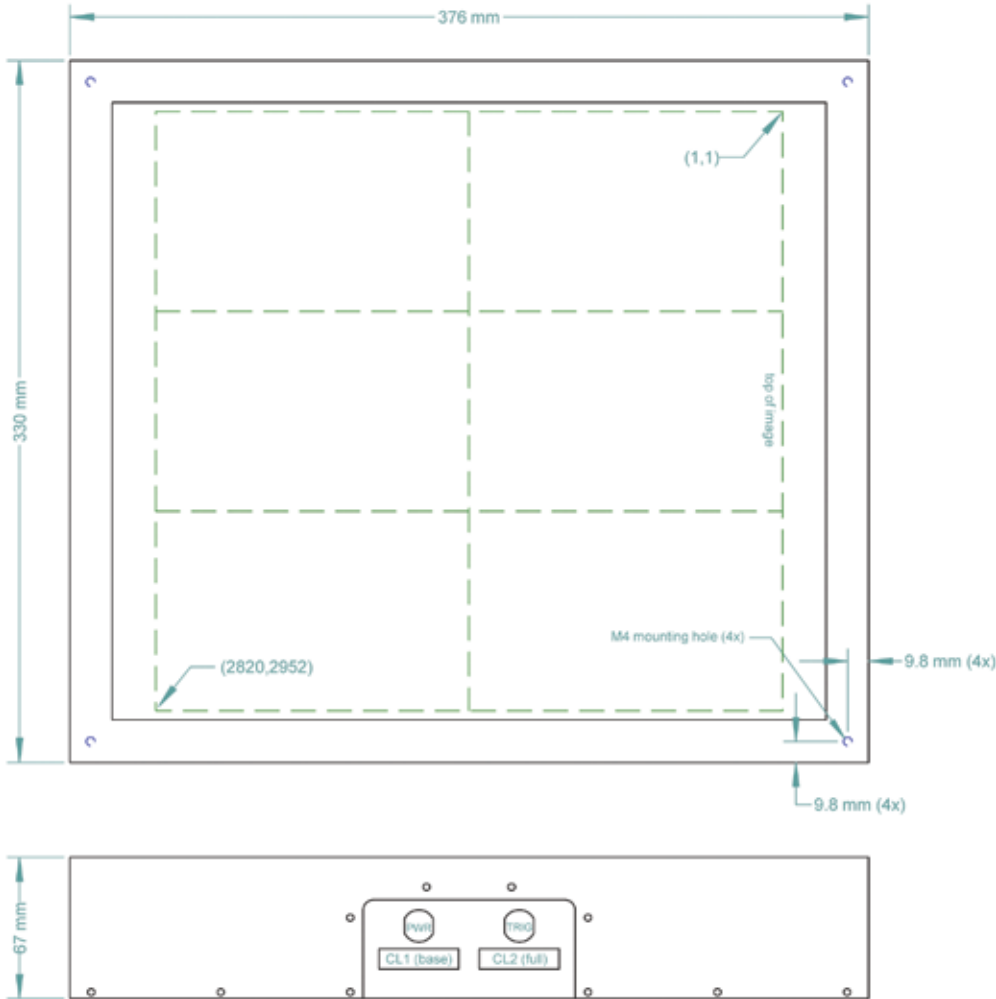
Ordering Information:

Shad-o-Box 3028 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 (90-264 V, 50-60 Hz). For international orders, please specify the type of power cord you require.

P/N	Description
SB1398	Shad-o-Box 3028 HS Camera
-01	Min-R 2190
-02	DRZ Standard

Image Quality: up to 25 correctable line defects allowed

Mechanical Drawing:



Power Connector:
2-pin LEMO EGG.2B.302.CLL

- Pin 1 +12V/3.0A
- Pin 2 Ground



Trigger I/O Connector:
8-pin LEMO EGG.2B.308.CLL

- | | | | |
|-------|-----------|-------|-----------|
| Pin 1 | Trig In1 | Pin 5 | Trig In2 |
| Pin 2 | Ground | Pin 6 | Ground |
| Pin 3 | Trig Out1 | Pin 7 | Trig Out2 |
| Pin 4 | Ground | Pin 8 | Ground |





www.teledynedalsa.com

Americas

Sunnyvale, CA
+1 408-736-6000
sales.rad-icon@teledynedalsa.com

Europe

Eindhoven, The Netherlands
+31 40-259-9000
sales.europe@teledynedalsa.com

Asia Pacific

Tokyo, Japan
+81 3-5960-6353
sales.asia@teledynedalsa.com

Shanghai, China
+86 21-3368-0027
sales.asia@teledynedalsa.com

Shad-o-Box cameras are manufactured and supported by Teledyne Rad-icon Imaging, a wholly owned subsidiary of Teledyne DALSA.
Teledyne DALSA has its corporate offices in Waterloo, Canada

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