

850S Camera

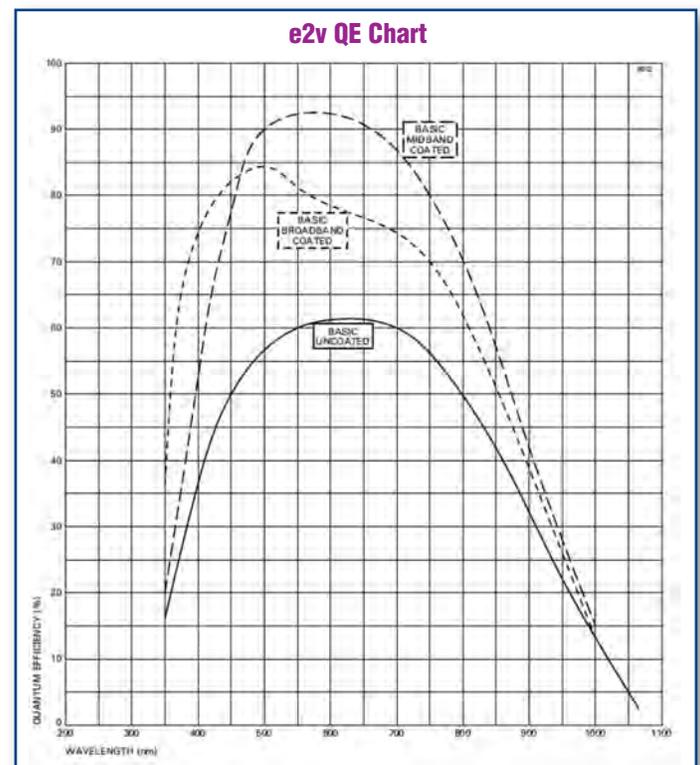
Features

- **CCD operating temperature of -90°C**, and tuned for -100°C dark current performance
- **Multiple read speeds available**; common speeds include 100, 200, 500 and 800kHz
- **Lowest read noise in the industry**; sub 3e- RMS noise performance
- **High dynamic range**; low noise performance with 16-bit digitization and high full well provide large dynamic range imaging
- **Three sensors available**; large sized 2k x 2k 13.5µm pixel (42-40), 1k x 1k 13µm pixel (47-10), and 2k x 512 13.5µm pixel (42-10), front or backside illuminated
- **Binning and region of interest imaging**; high performance with binning, and ROI imaging for small area high speed available
- **Multi-port readout**; one or two port readout available upon request
- **Shutter available**; shutters can be mounted on the camera and driven by the camera itself and configured by software
- **Fiber optic communication**; standard communication to computer by fiber optic cable to proprietary PCI or PCIe card
- **Software included with every camera** is our SI Image software suite for camera control, data manipulation and archiving; native file format is FITS; C++ and LabView SDK available upon request



SI's 850S camera is designed for uncompromising camera performance in a TEC camera unit. Dark current levels typically seen only in sub -100°C cooled cryo cameras can be had with the convenience of thermoelectric cooling.

Back illuminated CCDs along with industry leading low read noise creates the perfect camera for low-light level applications such as astronomy, bioluminescence and plate reading for drug discovery. Typical QE performance from e2v sensors shown below. Refer to e2v for up to date QE and blemish specifications.



Typical Camera Performance 42-40 CCD

Read noise 100kHz	2.8e-
Read noise 200kHz	3.3e-
Read noise 500kHz	4.3e-
Read noise 800kHz	8.3e-
Dark current -90°C	0.0003e- /pixel/s
Full well	100ke-
Linearity	<1%, 200e- to 100ke-
CCD size	27.4mm x 27.4mm
CCD pixel size	13.5µm
CCD pixel dimension	2048x2048
Backside AR coatings available	Midband, Broadband, none

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Typical Camera Performance 47-10 CCD	
Read noise 100kHz	2.8e-
Read noise 200kHz	3.3e-
Read noise 400kHz	4.5e-
Read noise 800kHz	9.0e-
Dark current -90°C	0.0003e-/pixel/s
Full well	100ke-
Linearity	<1%, 200e- to 100ke-
CCD size	13.3mm x 13.3mm
CCD pixel size	13.0µm
CCD pixel dimension	1024 x 1024
Backside AR coatings available	Midband, Broadband, none and Enhanced UV

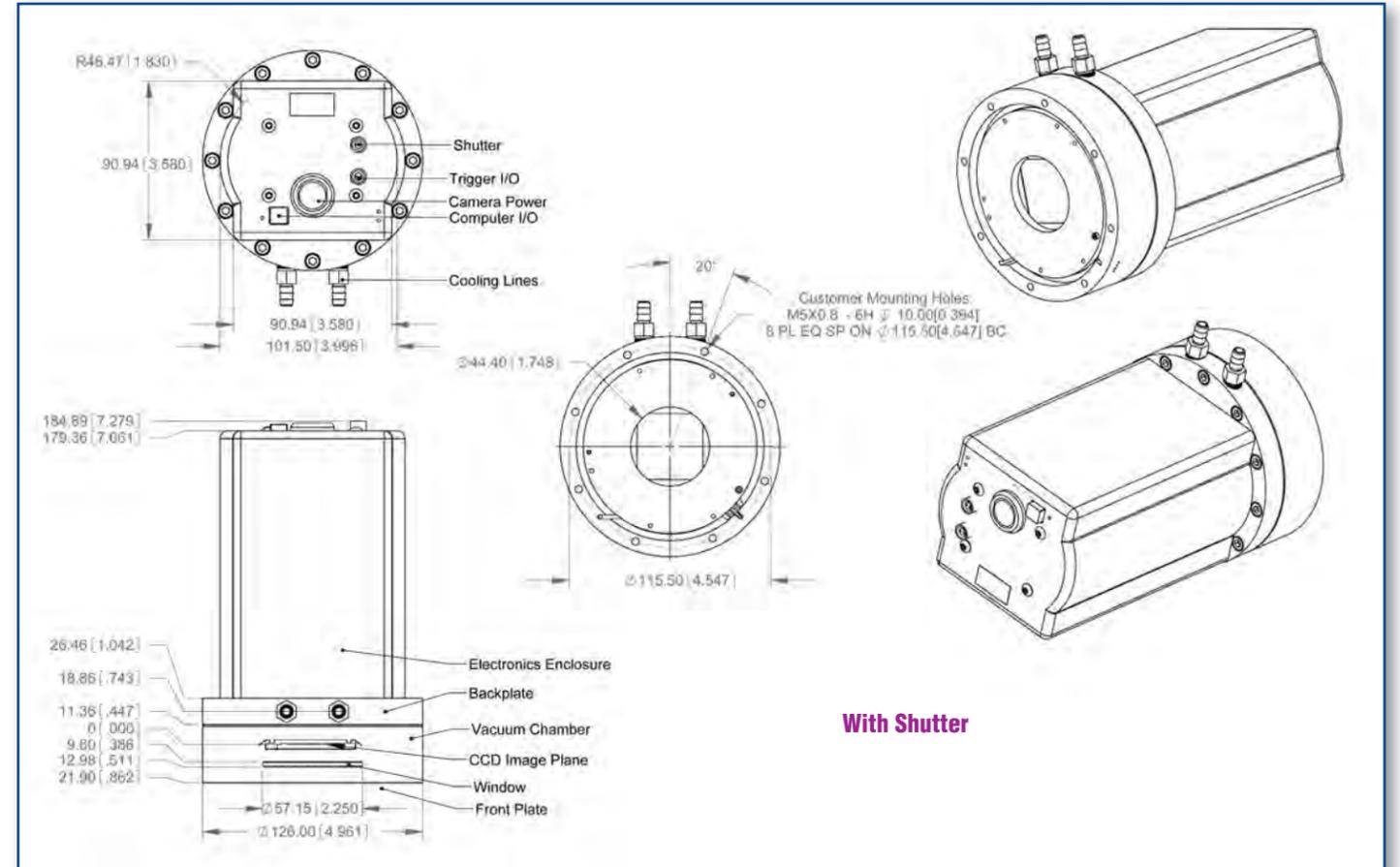
Typical Camera Performance 42-10 CCD	
Read noise 100kHz	2.7e-
Read noise 200kHz	3.1e-
Read noise 400kHz	4.3e-
Read noise 800kHz	8.3e-
Dark current -90°C	0.0004e-/pixel/s
Full well	100ke-
Linearity	<1%, 200e- to 100ke-
CCD size	27.6mm x 6.9mm
CCD pixel size	13.5µm
CCD pixel dimension	2048 x 512
Backside AR coatings available	Midband, Broadband, none and Enhanced UV

Noise and Binning with 42-40 CCD		
Binning @ 100kHz	Typical	Maximum
1x1	2.70e-	3.5 e-
2x2	2.76 e-	5.2 e-
4x4	2.87 e-	6.4 e-

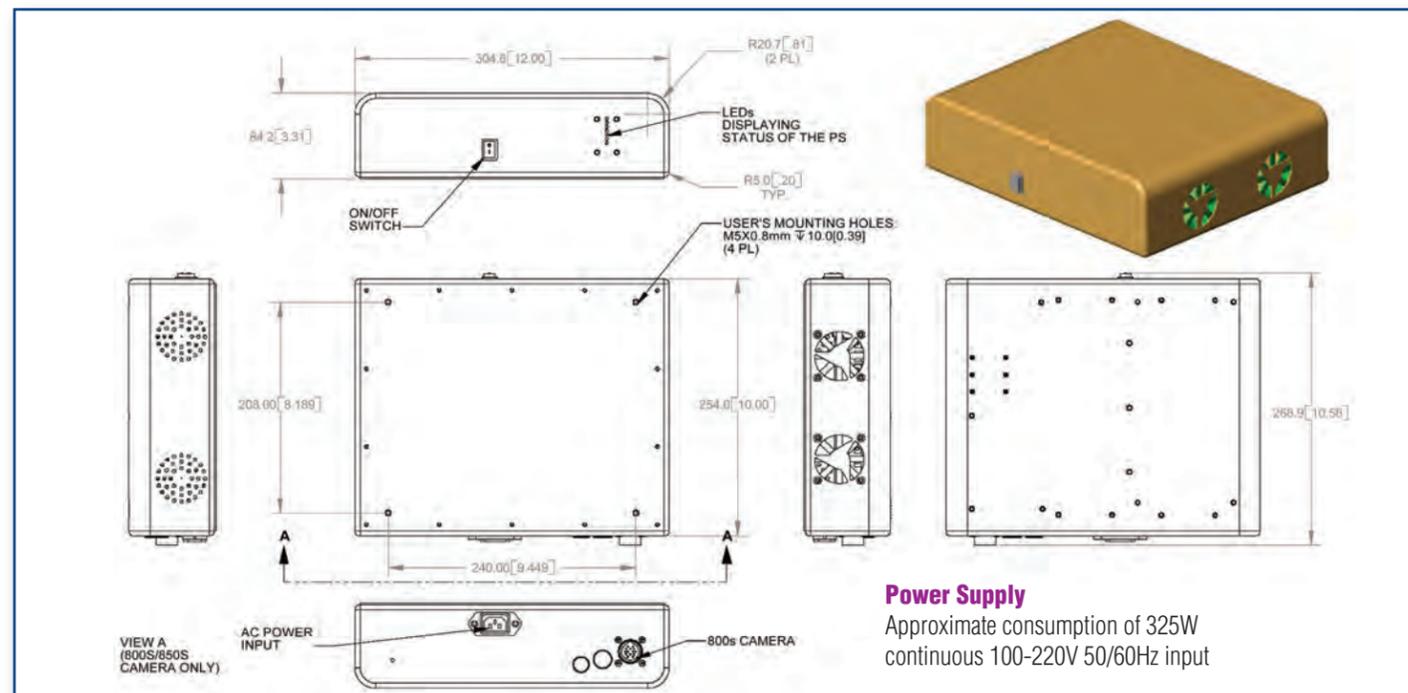
Grade 1 CCD Cosmetics (42-40)	
Column Defects	3
Dark pixels	150
Bright pixels	150
Traps	20

CCD cosmetics subject to change.
Contact SI if other requirements must be met.
See www.e2v.com for the latest specifications.

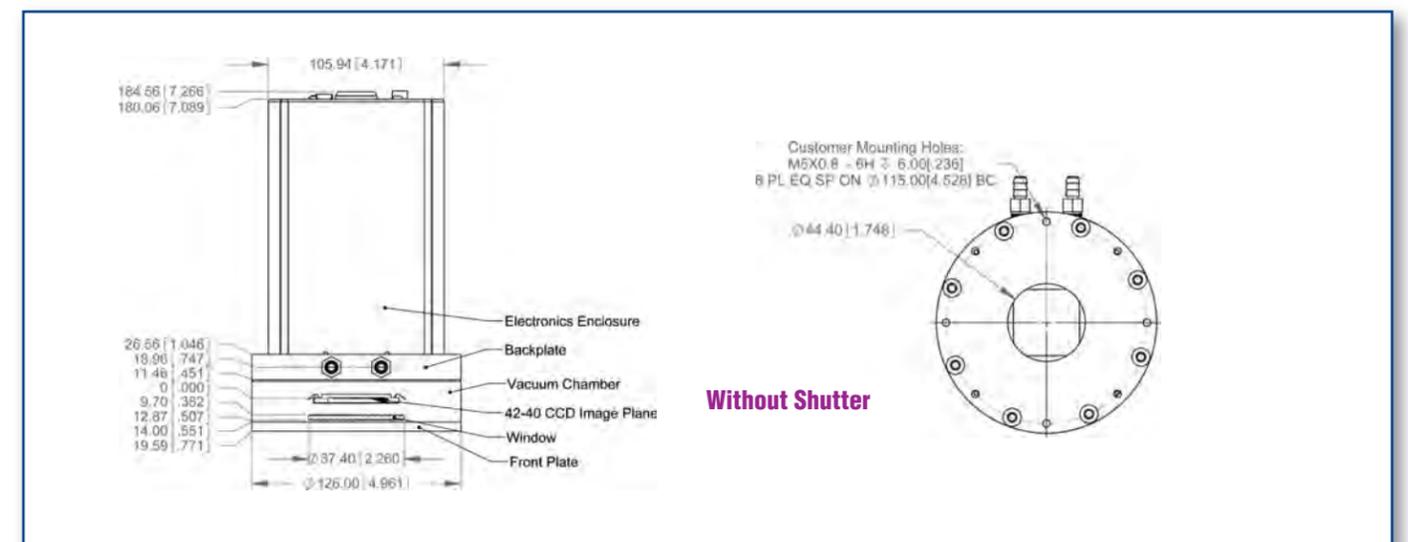
All camera specifications are subject to change.
Contact SI for details on configuring a camera specific to your application.



With Shutter



Power Supply
Approximate consumption of 325W
continuous 100-220V 50/60Hz input

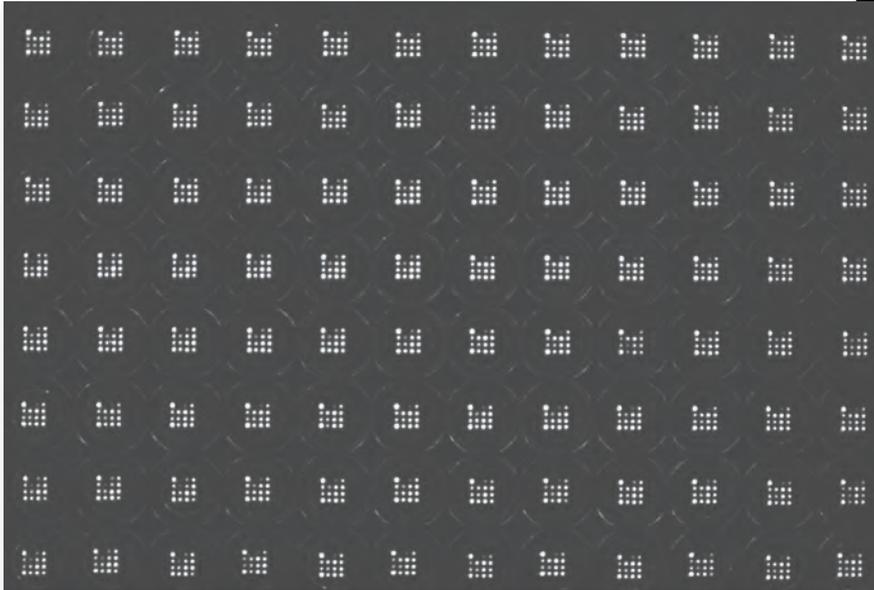


Without Shutter

850S camera requires 1Lpm flow of 20°C water to maintain operating temperature.
All mechanical details subject to change. Contact SI to tailor a camera specific to your application.



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Drug discovery frequently utilizes chemi-luminescence to indicate the interaction of compounds with specific targets relevant to the object of study. This signal is frequently very faint, and in some cases is emitted directly from an animal with a tumor inside. The 850S has the ability to bin to high levels without sacrificing the low read noise capability and allows for extremely faint signals to be detected and quantified.

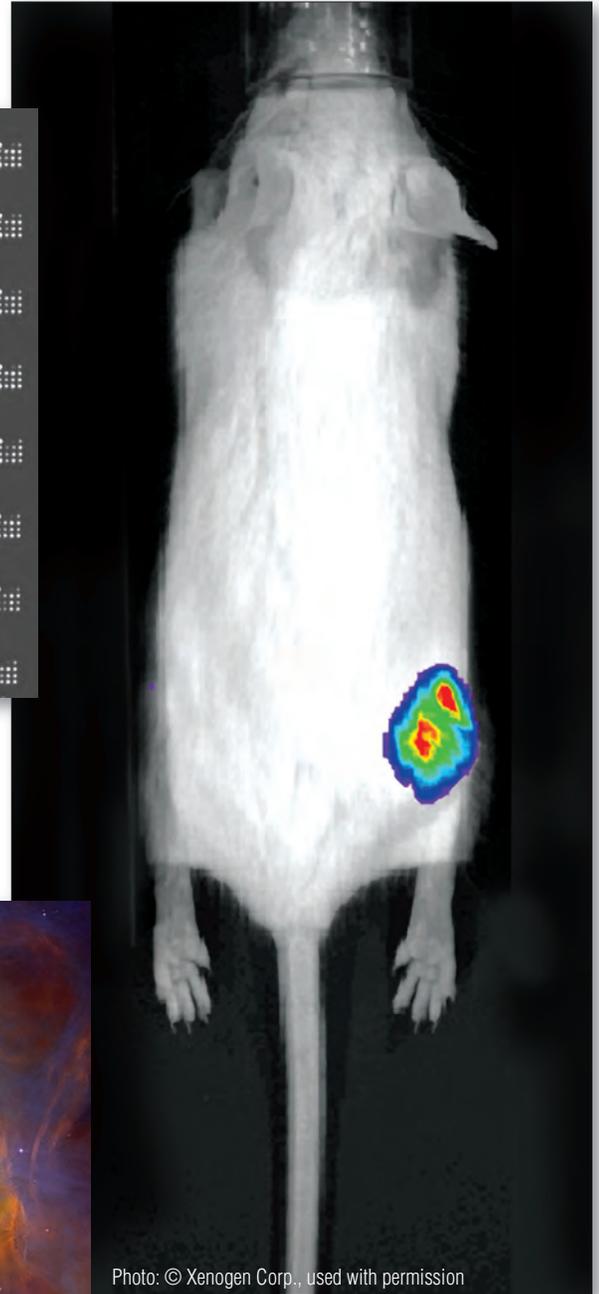


Photo: © Xenogen Corp., used with permission



Photo: Daniel López, IAC, imaged with a 2k x 2k Spectral Instruments CCD Camera

The 850S can hold up to a 2k x 2k CCD and is thus amenable for imaging astronomical targets on medium to large telescopes. The convenience of water cooling and the performance of a cryo-cooled CCD allows the 850S camera to be very useful for astronomers conducting direct imaging or spectroscopy.