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.

**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
**Typical Camera performance 42-40 CCD**

- Read noise @ 100kHz: 2.8e-
- Read noise @ 200kHz: 3.3e-
- Read noise @ 400kHz: 4.5e-
- Read noise @ 800kHz: 8.3e-
- 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: 13.5µm
- CCD pixel dimension: 2048x2048
- Backside AR coatings available: Midband, Broadband, none, and Enhanced UV

**Noise and Binning with 42-40 CCD**

<table>
<thead>
<tr>
<th>Binning @ 100kHz</th>
<th>Typical</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Read noise @ 200kHz</td>
<td>3.1e-</td>
<td>3.5e-</td>
</tr>
<tr>
<td>Read noise @ 400kHz</td>
<td>4.3e-</td>
<td>5.2e-</td>
</tr>
<tr>
<td>Read noise @ 800kHz</td>
<td>8.3e-</td>
<td>6.4e-</td>
</tr>
</tbody>
</table>

**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](http://www.e2v.com) for the latest specifications.

**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: 2048x512
- Backside AR coatings available: Midband, Broadband, none, and Enhanced UV

**Noise and Binning with 42-10 CCD**

<table>
<thead>
<tr>
<th>Binning @ 100kHz</th>
<th>Typical</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Read noise @ 200kHz</td>
<td>3.1e-</td>
<td>3.5e-</td>
</tr>
<tr>
<td>Read noise @ 400kHz</td>
<td>4.3e-</td>
<td>5.2e-</td>
</tr>
<tr>
<td>Read noise @ 800kHz</td>
<td>8.3e-</td>
<td>6.4e-</td>
</tr>
</tbody>
</table>

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

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**With Shutter**

850S camera requires 1Lpm flow of 20ºC water to maintain operating temperature.

All mechanical details subject to change. Contact SI to tailor a camera specific for your application.

**Without Shutter**

850S CCD Camera
850S CCD Camera

Typical Camera performance
42-40 CCD
Read noise @ 100kHz 2.8e-
Read noise @ 200kHz 3.3e-
Read noise @ 400kHz 4.5e-
Read noise @ 800kHz 8.3e-
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 13.5µm
CCD pixel dimension 2048x2048
Backside AR coatings available
Midband, Broadband, none, and Enhanced UV

With 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 for your application.

Without Shutter

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.
Drug discovery frequently utilizes chemiluminescence 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.

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 cryocooled CCD allows the 850S camera to be very useful for astronomers conducting direct imaging.

**Typical Camera performance 47-10 CCD**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Read noise @ 100kHz</td>
<td>2.8e-</td>
</tr>
<tr>
<td>Read noise @ 200kHz</td>
<td>3.3e-</td>
</tr>
<tr>
<td>Read noise @ 400kHz</td>
<td>4.5e-</td>
</tr>
<tr>
<td>Read noise @ 800kHz</td>
<td>8.3e-</td>
</tr>
<tr>
<td>Dark current –90°C</td>
<td>&lt;0.0003e-/pixel/s</td>
</tr>
<tr>
<td>Full well</td>
<td>100ke-</td>
</tr>
<tr>
<td>Linearity</td>
<td>&lt;1%, 200e- to 100ke-</td>
</tr>
<tr>
<td>CCD size</td>
<td>13.3mm x 13.3mm</td>
</tr>
<tr>
<td>CCD pixel size</td>
<td>13.0µm</td>
</tr>
<tr>
<td>CCD pixel dimension</td>
<td>1024 x 1024</td>
</tr>
<tr>
<td>Backside AR coatings</td>
<td>Midband, Broadband, none, and Enhanced UV</td>
</tr>
</tbody>
</table>