

## FEATURES:

- High Resolution: 3.2 Mega-pixels
- 3-Stage Peltier cooled for extremely low dark current
- High QE  90% peak  Microlenses  Transparent ITO gate
- Low noise, high sensitivity
- Unlimited readout pattern definition
- Reliable hermetically sealed cooling package
- Network ready  Platform independent Ethernet interface
- Single 12VDC Voltage
- 10 x 13 x 17 cm camera dimensions  No additional "camera control box" necessary
- Precise triggering / synchronization
- Software interfaces  TWAIN, SDK (active X / DLL), SamBa control

## APPLICATIONS:

- Luminescence Detection
- Fluorescence Imaging & Spectroscopy Visible & Near-IR
- Microscopy
- Fluorescence In-Situ Hybridization
- High Throughput Screening
- Biochips and Micro-Arrays
- DNA Analysis
- Proteomics



# SPECIFICATIONS:



## intelligent Array Sensor Cooled 3.2 Mega-Pixel CCD Camera for High Sensitivity

Parameter	Requirements
CCD architecture	3.2 Megapixel Kodak KAF-3200ME Full-Frame CCD; Transparent ITO gate with on-chip microlenses for increased QE; Low dark current, single output, 100% Fill factor.
Sensitive area	14.85 mm horiz. x 10.26 mm vert.
CCD pixel resolution (active)	2184 horiz. X 1472 vert.
Pixel size	6.8 $\mu\text{m}$ x 6.8 $\mu\text{m}$
On-chip binning capability	Unlimited 2-dimensional. CCD readout pattern is user defined and real-time programmable.
Camera body dimensions	10 x 13 x 17 cm (without lens adapter and lens)
Camera mounting: Suitable for optics tables and embedded systems:	M6-threaded mount on two opposite sides. Spectrograph flanges and "optics and adjustment adapter".
Pixel alignment to mounting flange	Precise alignment to pins available according to application requirements.
CCD focal plane	The CCD surface is as far forward as possible, so that it can be placed as close as possible to customers' optics. There is no obstruction caused by the housing protruding beyond the CCD.
Optical interfaces	Standard: C-Mount, 100 mm diameter interface, spectrometer flange. Customer-specific optics interfaces. F-Mount adapter.
Software interfaces	SDK (active X / DLL), SDK Viewer, TWAIN, SamBa Control
PC interfaces	TCP / IP, Ethernet, UDP, LVDS- Frame grabber
Operating Modes	High quality mode (HQ), fast binning (FBin), high sample rate (HSR)
Mechanical shutter	Optional integrated

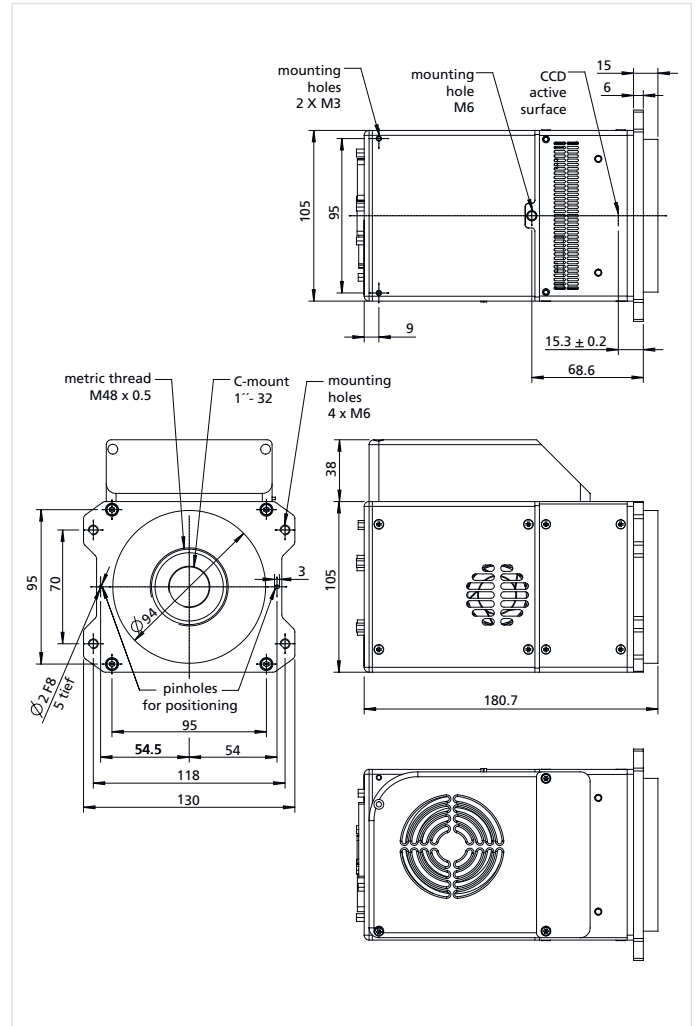
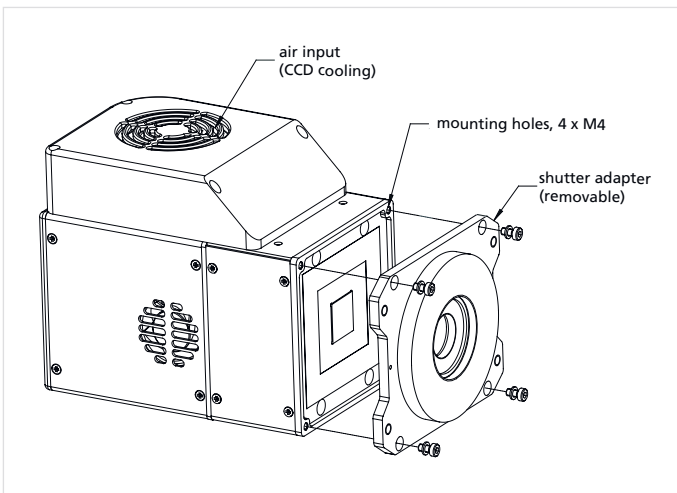
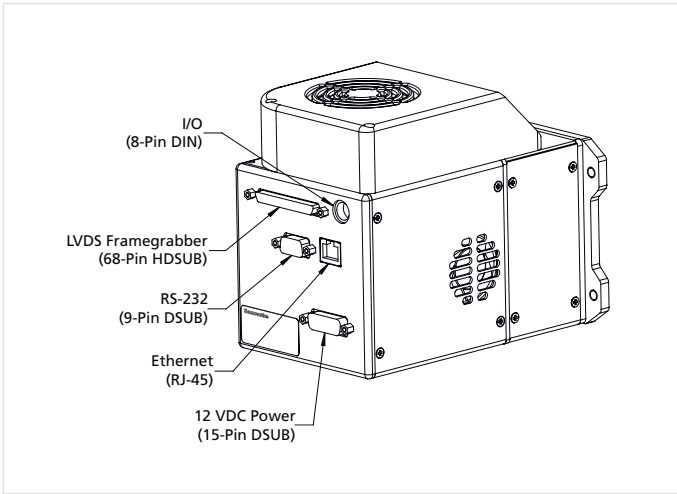
Parameter	Specification	Units
Wavelength range (Refer to QE curve)	300-1000	nm
Peak quantum efficiency at 600 nm (hermetically sealed with AR coated window)	85	%
Full well capacity (Non-Anti-bloomig) No binning Vertical binning (into serial register) 2-Dimensional binning (unlimited)	55000 110000 110000	e <sup>-</sup>
Dark current +25 C Peltier cooled to -35°C	15 0.010	e <sup>-</sup> / pixel/s
Readout noise	12	e <sup>-</sup> rms
Digital output resolution:	16	bits
Frame readout time full resolution: 2-D binning:	6.4 (Note 1)	s
Ethernet data rate (net image data transfer)	1	MB/s
Camera conversion constant (k) Gain 1: Gain 2: Gain 3: Gain 4:	1.64 1.2 1.04 0.84	e <sup>-</sup> /ADU
Integral non-linearity (digital output vs. optical input, over the full dynamic range)	± 1	%
Pixel readout rate	500	kpix/s
Dynamic range	78	dB
Cooling performance (delta-T, 30° ambient to CCD)	60	°C
Power supply Voltage Current	12 5	VDC A

1) Since readout pattern is fully programmable, higher frame rates at lower resolution are possible.

### Order information

Order Number	SVSB08-MB-1001
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# MECHANICAL DIMENSIONS:



## coolSamBa HR-320



The coolSamBa HR-320 is an intelligent, adaptive optical measurement system targeted for **robust, consistent sample analysis**. Strong, reliable cooling allows **very long exposure times** for ultra-sensitive measurements. At the same time, this OEM product is designed for reducing your system cost, ease of embedding into commercial analytical instrumentation and field support.

The state-of-the-art Kodak CCD devices such as the KAF 3200 (microlensed, ITO transparent gate) offer highest sensitivity in the industry.

**SAMPLE-BASED-DETECTION - beyond standard imaging:** On-the-fly programming of special readout patterns gives instrument designers flexibility of operating the CCD as a "programmable area optical sensor".

This versatility is essential for spectroscopy and analytical applications, where the goal is optimizing sample data quality.

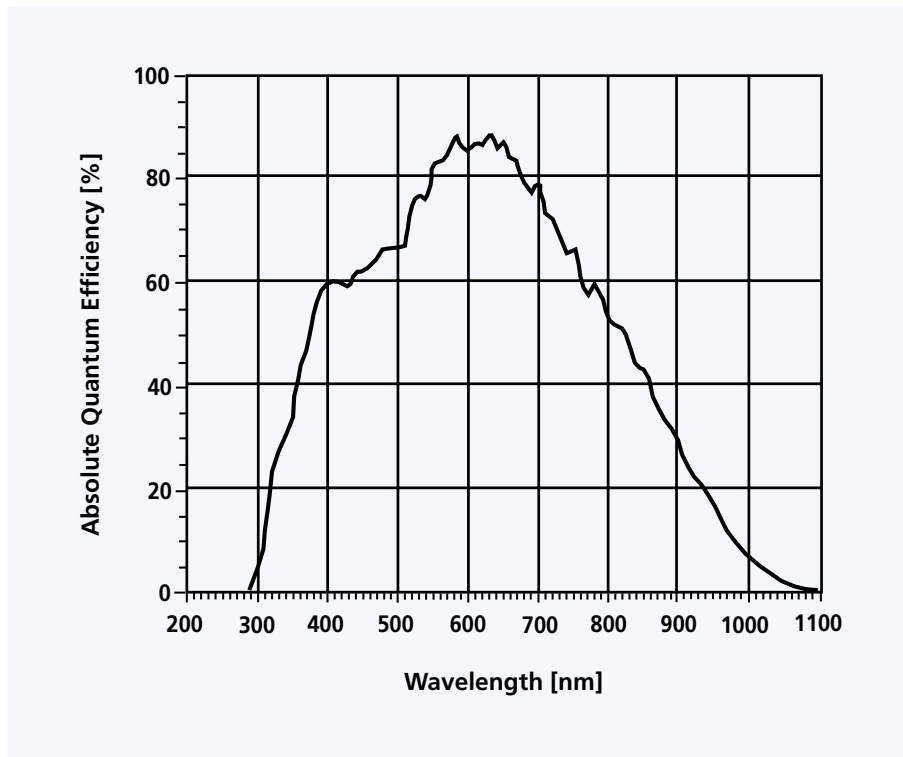
### ROBUSTNESS / CONSISTENCY - 3-level of integrated data processing:

**Level 1:** Hardware in-line data processing in FPGA e.g.: eliminates camera-to-camera variation (optional).

**Level 2:** 32-bit real-time RISC – Mid-level computation, data reduction and feedback controls.

**Level 3:** TMS320C6x Digital Signal Processing – Complex algorithms for adaptive optics and digital control systems (optional).

# IMAGE SENSOR SPECIFICATION:



**Spectral response curve**

Source: Data Sheet Kodak KAF 3200



**coolSamBa HR-320**

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