

## Application

The Xplorer™ Monochrome camera is a low noise, deep cooled digital camera designed for low-light quantitative scientific applications such as FRET/FRAP, bioluminescence, fluorescence particle tracking, and ion imaging. This 14 bit camera provides multiple readout modes, a wide field of view, and a C-mount interface.

Features	Benefits
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-42°C regulated cooling .....	Deep, regulated cooling reduces dark noise and increases repeatability for long exposure image captures
4 Mpixel CCD with 21.4 mm diagonal .....	Provides field of view that closely matches that in the microscope eyepieces without requiring expensive optical couplers
Multiple readout speeds .....	Allows the user to select between high speed and low noise image captures
Programmable gain .....	Facilitates live mode previews of low light specimens
14 bit image capture .....	Extra bit depth is ideal for image enhancement
40 MHz live mode (dual channel 20 MHz) ..	High-speed imaging for real time viewing
Interline progressive scan CCD .....	Electronic shuttering eliminates mechanical shutter shortcomings related to speed, wear, and vibration
Exposure while downloading .....	Allows user to overlap exposure with previous image download to improve speed
SPOT™ Software .....	Provides essential tools for modern microscopy and is widely supported by 3rd party software companies for high end applications as well as providing DLL with SDK for OEM Driver development
Mac® & Windows® operating systems	
Basic & Advanced Applications	
Twain & Third Party Interface	
DLL w/ SDK and Tutorial manual	
3rd Party Driver support	

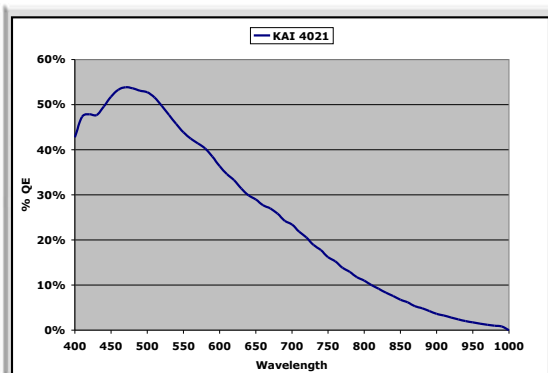
Xplorer™ — Monochrome



# Data Sheet

DIAGNOSTIC  
Instruments, Inc.  
source  
solution

Xplorer™ — Monochrome



Captured Frames per Second\*

Binning	REGION OF INTEREST			
	2048 X 2048	1024 X 1024	512 X 512	256 X 256
1 x 1	3.8	6.3	9.7	13.2
2 x 2	6.3	9.6	13.2	16.1
3 x 3	8.1	11.7	15.0	17.3
4 x 4	9.6	13.1	16.0	18.0
8 x 8	12.9	15.9	17.9	19.1

\*1ms exposure with post-processing deferred, taken with 2.6 Ghz Xeon processor running Windows XP. Capture rates on other computers OS platforms may vary.

### **CCD information:**

Kodak KAI-4021-M with cover glass  
Monochrome progressive scan interline CCD  
2048 x 2048, 7.4 µm square pixels  
15.16 x 15.16 mm active area, >1" optical format  
300x anti-blooming

### **Cooling:**

-42° C regulated cooling via three stage Peltier thermoelectric cooler; -71° C maximum differential from ambient

### **Digitization information:**

Digitized pixel by pixel at CCD sensor  
Live mode: 8 bit x 40 MHz (Dual channel  
8 bit x 20 MHz )

Live image frame rate: 11 f/s without binning; up to 17 f/s with binning

Capture mode: 14 bit (10 and 20 Mhz selectable)  
A/D Converter full scale set to 30,000 e (no binning); 60,000 e (with binning)

Nonlinearity: <1% (gain 1)

Saved bit depths: 8, 12 or 16 bit BW

### **Noise specifications:**

Read noise: 9 e at 10 Mhz; 12 e at 20 Mhz

Dark current: 0.0002 e/p/s

### **Exposure:**

No maximum exposure; 1 ms minimum exposure

Captured and live mode automatic exposure

Captured and live mode manual exposure

**Lens mount:** C-mount

**Sealing window:** Multilayer anti-reflection coating

**Computer interface:** PCI bus card

**External device control:** TTL level output with programmable delay

**External trigger input:** TTL level input with programmable delay

### **Mechanical:**

**Tripod mount:** 1/4 - 20 UNC

**Camera head:** 5.00" (127 mm) x 4.40" (112 mm) x 6.01" (153 mm), 4.4 lbs. (2.0 kg)

**Power supply:** 3.61" (92 mm) x 3.90" (99 mm) x 8.13" (207 mm), 3.2 lbs. (1.5kg)

**Operating environment:** 0 to 30° C ambient, 0-80% relative humidity noncondensing

**Power requirements:** 100-240 VAC, 3 A

### **SPOT software features:**

Live mode viewing window & controls, auto-exposure live and capture modes, image capture window, predefined and custom image setups, flat field correction, pan and zoom windows, multiple customizable floating taskbars, spot metering, non-destructive annotations, non-destructive calibration marks, measurement tools, sequential image capture and playback, exportable image archiving database (PC only), report generator, macro scripting, interactive print dialog, online help menu

### **File formats:**

Bitmap, TIFF, TIFF-JPEG, JPEG-2000, PICT, AVI (PC, export only), Quicktime (Mac, export only)

### **TIFF File sizes:**

8 bit BW / 4 MB

12 bit BW / 6 MB

16 bit BW / 8 MB

### **Drivers included:**

Twain for supported Windows® operating systems  
Third Party Interface supported Mac® operating systems

### **Native drivers for 3rd party software:**

Call or visit our website ([www.diaginc.com](http://www.diaginc.com))

### **Minimum system requirements:**

Full height, half length PCI bus slot (desktop) or PCMCIA cardbus slot (laptop)\*

\*-Requires Magma™ adapter (sold separately)

PC: Pentium 400 Mhz – Windows 98, 98SE, 2000, ME, or XP

Mac: 400 Mhz G3 – OS 10.2.8 or higher

RAM: 256 MB RAM

Video card: 24 bit RGB @ desired resolution

### **Items included:**

Camera head, PCI plug-in board, data cable, power supply cable, power supply, power cord, SPOT software install CD (includes drivers), software user guide, hardware user guide, and 2 year warranty

Mac® is a registered trademark of Apple Computers, Inc.  
Windows® is a registered trademark of Microsoft  
Specifications are typical and subject to change without notice.  
Ambient temperature is defined as 20° C.

