

Point Grey Rd. 2400

Ladybug[®]3



Ladybug[®]3: high performance spherical digital video system



POINT GREY
RESEARCH

The Ladybug[®]3 spherical digital video system, designed and manufactured by Point Grey Research, is a complete hardware and software package that delivers 12 Megapixels of high resolution 360-degree visual coverage.

See 360° of possibilities: www.ptgrey.com/ladybug3



See 360° of possibilities.

The Ladybug[®]3 camera from Point Grey Research covers more than 80 percent of a full sphere, with six high quality 1600x1200 Sony CCD sensors providing up to 12 million effective pixels.



Ladybug2

Ladybug3

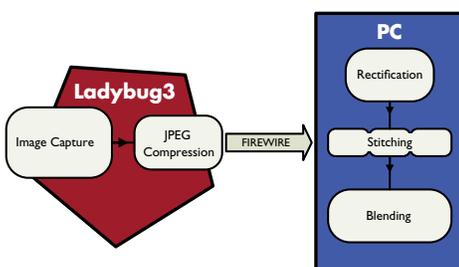
The newest member of the Ladybug family

The high resolution Ladybug[®]3 joins the highly affordable Ladybug2 as part of the Ladybug family of spherical digital video systems. Both of these compact camera products feature six high quality [Sony[®] CCD image sensors](#), with five CCDs positioned in a horizontal ring and one positioned vertically. They are also [pre-calibrated](#) to enable high quality spherical image stitching. Lens settings, such as focus and iris, are fixed to ensure the camera stays calibrated. The Ladybug3 and Ladybug2 also perform all the image acquisition, processing, stitching and correction necessary to integrate multiple camera images into full resolution digital [spherical and panoramic videos](#) in real time.



GIS mapping, surveillance, security, and more

The quality and flexibility of spherical video data makes the medium ideal for applications requiring synchronization of video images. This revolutionary technology is now used by a wide variety of industries, including: large scale [GIS systems](#) for location-based visualizations, such as street-level viewing, and geographical mapping; high end [security and surveillance](#) applications; city planners for inventory and traffic [scene analysis](#); and the [entertainment industry](#) for lighting models, full dome projection content, and other immersive experiences. The Ladybug3 camera's [water resistant housing](#) also allows it to operate in most outdoor environments.



Finding a balance between image quality and speed

The Ladybug3 uses an [embedded JPEG compression engine](#) and fast [800Mbit/s IEEE-1394b \(FireWire\)](#) interface to stream full [12 MP images](#) at [15 FPS](#), or raw uncompressed images at just under [7 FPS](#), to the host system. The user can adjust the JPEG compression rate on-the-fly to balance image quality against frame rate. Camera parameters, such as [gain](#), [shutter](#), [white balance](#) and [gamma](#), can also be adjusted through software to find the right match for the surrounding environment. To meet the requirements of complex imaging scenes, the camera can also be configured to operate in a special [high dynamic range mode](#), which continuously cycles through a series of camera shutter and gain settings.

Specifications	Ladybug3	Ladybug2
Image Sensor Type	six (6) Sony progressive scan color CCDs (five in horizontal ring, one on top)	
Image Sensor Model	Sony 2.0 MP 1/1.8" ICX274	Sony 0.8 MP 1/3" ICX204
Maximum Resolution	1600(H) x 1200(V) (each sensor)	1024(H) x 768(V)
Shutter Type	global shutter	
Analog-to-Digital Converter	Analog Devices 12-bit ADC	
Video Data Output	8-bit raw Bayer (color) digital data	
Digital Interface	9-pin 1394b (FireWire) 800Mb/s interface for camera control, power and video data	
	locking screws guarantee secure connection	fiber optic link between Head and Compressor
Frame Rates (max resolution)	15 FPS JPEG compressed 6.5 FPS uncompressed	30 FPS JPEG compressed 15 FPS uncompressed
Partial Image Modes	region of interest modes via Format_7, programmable via software	
Optics	six (6) high quality 2.5 mm focal length microlenses	
General Purpose I/O Port	8-pin GPIO connector for external trigger, strobe, serial port or external power	
Camera Settings Control	shutter, gain, white balance, gamma and JPEG compression, are programmable via software	
Voltage Requirements	8-32 V, via the IEEE-1394b interface	
Power Consumption	7.2 W at 12 V	11.2 W at 12 V [†]
Case Material	machined aluminum housing, anodized red	
Case Type	single unit, water resistant	two units (Head and Compressor)
Dimensions (W x L x H)	122 mm x 141 mm	100 mm x 110 mm x 131 mm [†]
Mass	2416 g	1190 g [†]
Camera Status	status LED to indicate power and device connection	
Camera Control Specification	IIDC 1394-based Digital Camera Specification v1.31	
Emissions Compliance	complies with CE rules and Part 15 Class A of FCC Rules	
Operating Temperature	0° to 45°C (-30° to 60°C storage)	
Warranty	1 year	

[†] Includes both Ladybug2 Head and Compressor units

All that's needed to plug and play **Complete software system**

The Ladybug[®]3 spherical digital video system is designed to make getting started with spherical video as simple as possible. Each system comes complete with a Ladybug3 camera and a license of the Ladybug software development kit (SDK). First-time users will receive all the hardware needed to get the camera running, including:



- FirePRO™ IEEE-1394b PCI Express® card
- IEEE-1394b ExpressCard for notebooks
- 10 meter 1394b cable with locking screws
- Tripod mounting system

Users can take comfort in knowing that their new Ladybug3 camera has passed [rigorous quality control testing](#) and is covered by a full [one-year warranty](#). Point Grey is also proud to offer world-class support on installation, configuration, customization, and troubleshooting, to ensure our customers derive significant value from their camera system. Users can expect a superior ownership experience through online user manuals, regular software updates and [quick response email and phone support](#).

The Ladybug3 system includes feature-rich software to manage image acquisition, spherical and panoramic image production, and camera settings. It includes the Ladybug-CapPro program, source code for a quick start in the C/C++ programming environment, a camera device driver, full software library and Application Programming Interface (API).

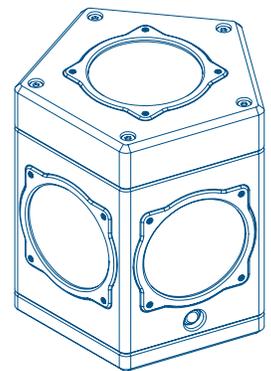


The LadybugCapPro program eliminates the need to create an application to access and control the camera system, and allows users to:

- View real-time fully stitched panoramic and spherical images
- Store streaming data to the hard drive for post processing
- Access and convert stored data to standard video formats
- Control camera shutter, gain, and JPEG compression

LadybugCapPro can also handle integrating and storing data from recommended NMEA GPS devices via the host serial port.

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