

Lynx Cameras

The ideal solution for mobile surveying uses a combination of laser scanning and camera technologies precisely configured for simultaneous collection. The **Lynx** family of mobile sensors provides the ideal solution with up to four individual cameras and the **Point Grey Ladybug® 360°** camera as standard options.

Lynx cameras not only provide precisely georeferenced image data, they also add the advantage of being able to visually verify objects seen in lidar points with a more familiar form of image visualization. Imagery captured by cameras can be draped onto the Lynx lidar point cloud, enhancing data value and information extraction capabilities.



5-Megapixel cameras

Using the game-changing **Optech LMS software**, images can automatically undergo coordinate and datum transformations to maintain spatial integrity with the lidar data. Both the Lynx SG1 and MG1 offer time-stamped and calibrated digital cameras that are fully integrated with the lidar data.

Up to four individual cameras and the Point Grey Ladybug® 360° camera can be integrated with a Lynx system.



Point Grey Ladybug® 360°camera



APPLICATIONS

- » Road surveys
- » Asset inventory
- » Rail surveys
- » Utilities mapping
- » Urban modeling
- » Engineering



FEATURES

- » Full Ladybug® integration for seamless, aligned and accurate 360° images
- » Support for up to four 5-Mpix cameras (depending on Lynx model) for higher resolution applications
- » Collect photogrammetric detail along with a 360° overview of the entire area
- » Cameras calibrated and boresighted to Lynx lidar sensors

The Lynx Camera Advantage

Camera and point-cloud data

Cameras complement and enhance the lidar point cloud data by providing co-located, simultaneous and georeferenced imaging of the scene surveyed by the sensors. Sensor fusion and a multisensor system add value to the lidar data at a minimal financial and operational cost. Although cameras are optional,

most Lynx clients place a high priority on acquiring camera data in tandem with lidar data, as quickly as possible and with no disruption to their workflow. The camera configuration and mounting points are both flexible. Lynx clients can choose either a 2-MP or a 5-MP camera in a custom environmentally isolated protective enclosure.

Parameter	5-Megapixel Camera
Lens, standard	F1.4/8 mm lens
Frame rate	Up to 3 FPS
Image resolution, (H) horizontal (V) vertical	2456 x 2058, scalable
Field of view	Horizontal 57°, vertical 47°
CCD/chip dimension	2/3" Bayer mosaic color progressive scan
Pixel size	3.45- μ m square pixels
Power	12 VDC
Weight (1)	200 g
Dimensions (H x W x L) (1)	55 x 55 x 55 (mm)
Shock	70 G
Vibration	10 G (20 Hz to 200 Hz)
Operating/storage temperature	-5°C to +45°C / -25°C to +60°C
Operating/storage relative humidity	20-90% non-condensing

1 Excluding enclosure.

Parameter	Ladybug® LD3-20S4C Camera (1)	Ladybug® LD5-U3-51S5C-44 Camera (1)
Image sensor model	Sony 2.0 MP 1/1.8" ICX274	Sony 5 MP 2/3" ICX655
Imaging sensor type	6 x Sony progressive scan color CCDs (5 in horizontal ring, 1 on top)	6 x Sony ICX655 CCD
Maximum resolution	1616 (H) x 1232 (V) (each sensor)	2048 (H) x 2448 (V) (each sensor)
Pixel size	4.4 μ m (H) x 4.4 μ m (V)	3.45 μ m
A/D converter	12 bit	12 bit
Digital interfaces	9-pin 1394b (FireWire) 800 Mb/s for camera control, video data transmission and power	USB 3.0 with locking screws for secure connection
Dimensions (W x H)	134 mm x 141 mm	197 mm x 160 mm (with lens hood)
Lenses	6 x 3.3-mm focal length microlenses	6 x 4.4-mm focal length lenses
Field of view	LD3 FOV on each of the 6 cameras is 113° on long side, 85° on short side (>80% of full sphere)	90% of full sphere
Maximum frame rate	Up to 3 FPS	Up to 3 FPS
General purpose I/O ports	8-pin GPIO connector for trigger strobe, serial port or external power	12-pin GPIO connector for external trigger input, strobe output, and camera power
Power requirements	8-30 V via IEEE 1394b cable or 8-pin GPIO connector	12-24 v, 13w via GPIO
Weight of camera head	2.4 kg	3.0 kg
Operating/storage temperature	0° to 45°C / -30°C to +60°C	0° to 45°C / -30°C to +60°C
Operating/storage relative humidity	20-80% / 20-95% no condensation	20-80% / 20-95% no condensation
Shutter	Global shutter; automatic/manual/one-push/extended shutter modes; 0.01 ms to 4.2 seconds (extended shutter)	Global shutter; automatic/manual/one-push/extended shutter modes; 0.02 ms to 2 seconds (extended shutter)

1 Specifications used with permission of Point Grey Research, Inc.

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