SURVEYOR® PS-SERIES

www.laserdesign.com

The Leader in 3D Laser Scanning Since 1987

Surveyor PS-Series 3D Laser Scanners

- ***Portable and lightweight.***
- ***Very easy to use. Only requires a few hours training.***
- ***Inexpensive – fits any budget.***
- ***Ideal for reverse engineering applications.***
- ***Digital color option available.***

Laser Design Inc, the leader in 3D laser scanning since 1987, introduces the PS-Series line of portable, lightweight 3D laser scanners. Both affordable and easy to use, the PS-Series scanners enable users to quickly scan complex textures and geometric data from any object. The USB-interfaced system creates a 3D digital model, which can be easily manipulated with optional scan processing software from Raindrop Geomagic. The Geomagic software performs editing and model-building functions including scaling, smoothing, point cloud editing, STL model generation, surface modeling, and stitching together of the data from multiple scan orientations to efficiently and accurately create 3D digital models. These models are then easily imported into popular CAD/CAM and 3D graphic software programs.

The PS-Series scanners use Laser Triangulation, an active stereoscopic technique where the distance of the object is computed by means of a directional light source and a video camera. A laser beam is deflected from a mirror onto a scanning object. The object scatters the light, which is then collected by a video camera located at a known triangulation distance from the laser. Using trigonometry, the 3D spacial (X-Y-Z) coordinates of a surface point are calculated. The CCD camera's 2D array captures the surface profile's image and digitizes all data points along the laser. Generating more than 100,000 polygons in a single scan, the PS-Series measures thousands of point coordinates and creates an accurate 3D geometric model of the object instantly!

Some PS-Series models allow the option of connecting an external digital camera to provide extremely high quality color texture information. The color texture is overlaid over the point cloud data to allow realistic looking 3D images to be generated. Support has been added for certain digital cameras which may be used in conjunction with the scanner to add color texture to the point cloud data. At the completion of each scan the software will take a picture using the color camera and overlay the color texture on top of the point cloud data. The color texture information can then be saved along with the rest of the data in the PMJX file and may be read by most 3D graphics packages.

The system is totally portable requiring only 2 cable connections (USB and power) and can be used with a laptop computer and camera tripod. The galvanometric scanning mechanism sweeps the laser beam over the object in order to generate highly accurate 3D surface information. The narrow-bandpass filter in the video camera removes ambient light to maintain detected laser stripe integrity. The CCD camera acquires textures without compression providing superior image quality. One PS-Series model is even rated as eye-safe and is ideal for scanning human faces.

Surveyor® PS-Series Specifications

	PS-4000C	PS-4000S	PS-4000M	PS-4000H	PS-4000L
General Properties:					
Mount	Camera Tripod	Camera Tripod	Camera Tripod	Camera Tripod	Camera Tripod
Size (in) Size (mm)	9.6W, 9.8L, 3.1H 245W, 250L, 80H	10W, 6.77L, 3.73H 254W, 172L, 95H	10W, 6.77L, 3.73H 254W, 172L, 95H	10W, 6.77L, 3.73H 254W, 172L, 95H	17.5W, 6.82L, 3.73H 445W, 174L, 95H
Weight	4.5 lbs / 2 kg	3.61 lbs / 1.64 kg	3.61 lbs / 1.64 kg	3.61 lbs / 1.64 kg	5.12 lbs / 2.33 kg
Adjustments	Software slider video-gain, scan-limits, Z Cutoff planes, and density control.				
Geometry Acquisition	Up to 7.5 frames/sec				
Laser:					
Parallax Base Distance	4.33” / 110 mm	4.33” / 110 mm	7.87” / 200 mm	7.87” / 200 mm	16.7” / 425 mm
Laser power/Class at 20 cm distance according to CDRH	6.7 mw - Class 1	6.7 mw - Class 1	30 mw - Class 2	6.7 mw - Class 1	30 mw - Class 2
Standoff	8" / 200 mm	4" / 100 mm	12" / 300 mm	14" / 350 mm	12" / 300 mm
Depth of Field	8-30" / 200-750mm	4-8" / 100-200 mm	12-26" / 300-650 mm	14-22" / 350-550 mm	12-36" / 300-900mm
Line Length	10" @ 16" 250 mm @ 400 mm	4.53" @ 6" 115 mm @ 150 mm	12" @ 18" 300 mm @ 450 mm	12" @ 18" 300 mm @ 450 mm	17" @ 24" 430 mm @ 600 mm
Point Density	512 points per scan, up to 500 scans	Up to 1000 points per scan, up to 1000 scans			
Eye Safe Certified	Yes	No	No	No	No
Scan Sweep (Left to Right)	12" @ 16" 300 mm @ 400 mm	2.76" @ 6" 70 mm @ 150 mm	10" @ 18" 250 mm @ 450 mm	4.33" @ 18" 110 mm @ 450 mm	13" @ 24" 330 mm @ 600 mm
Fan-out angle	30˚	30˚	30˚	15˚	30˚
Video System:					
Data Acquisition	High-sensitivity Sony B/W CCD with 8.4 x 9.8 micron pixel size	High-sensitivity Sony B/W CCD with 4.65 x 4.65 micron pixel size	High-sensitivity Sony B/W CCD with 4.65 x 4.65 micron pixel size	High-sensitivity Sony B/W CCD with 4.65 x 4.65 micron pixel size	High-sensitivity Sony B/W CCD with 4.65 x 4.65 micron pixel size
Digital Color Option	16M True Color	None	16M True Color	None	None
Digital Signal Processing	Advanced non-lossy Video Compressor				
Geometry Sampling Grid:					
Vertical direction	262 / 494 steps	1290 steps (highest resolution)			
Horizontal direction	Sub-pixel resolution (< than 1/10 pixel)				
Resolution and Accuracy:					
Standard deviation of points from the ideal plane position	±100 µm @ 200 mm ±1000 µm @ 750mm	±15 µm @ 100 mm ±50 µm @ 200 mm	±35 µm @ 300 mm ±120 µm @ 650 mm	±30 µm @ 350 mm ±80 µm @ 550 mm	±20 µm @ 300 mm ±120 µm @ 900 mm
	±.004” @ 8” ±.04” @ 30”	±.0006” @ 4” ±.002” @ 8”	±.0014” @ 12” ± .005” @ 26”	±.0012” @ 14” ±.0032” @ 22”	±.0008” @ 12” ±.005” @ 36”
Resolution	500 µm @ 200 mm 900 µm @ 750 mm	60 µm @ 100 mm 120 µm @ 200 mm	170 µm @ 300 mm 375 µm @ 650 mm	100 µm @ 350 mm 160 µm @ 550 mm	175 µm @ 300 mm 520 µm @ 900 mm
	02” @ 8” .035” @ 30”	.0025” @ 4” .005” @ 8”	.007” @ 12” . 015” @ 26”	.004” @ 14” . 0063” @ 22”	.007” @ 12” .02” @ 36”
Camera Software:					
Features	Scanner Active-X controls. Preview fast pre-scan window showing scan data and min/max distances in real time.				
Output Formats	.pmjx format - binary (X,Y,Z) coordinates, optional texture map and (640 x 480) square pixels RGB texture. May write (X,Y,Z) coordinates in text format, raw scan data, raw video data.				
PC Information:					
Interface and O/S	Standard plug and play USB. Windows 2000 or Windows XP.				
Uses:					
Primary Applications	Human faces / bodies	Small Parts	Medium - Large Parts	Small - Medium Parts	Large Parts

Specifications subject to change without notice.

Laser Design Inc.
9401 James Avenue South – Suite 132
Minneapolis, MN 55431 USA
sales@laserdesign.com / www.laserdesign.com Tel: 952-884-9648 Fax: 952-884-9653