



# 3D Laser Scanners

Known for its unsurpassed accuracy and scan quality, the Surphaser line of scanners offers both short range and medium range models ideal for use in reverse engineering, dimensional control, BIM, historical preservation, architecture, and forensics.

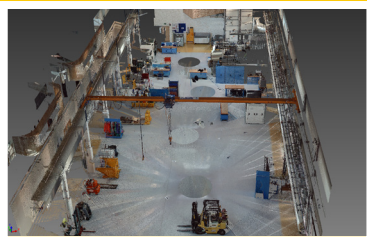
## Surphaser® 50HSX

- Sub-millimeter accuracy scanners with scan rate of up to 1.2 million points per second and scan ranges between 1m and 100m
- Built-in scan controller, tilt-sensor, and battery adapter
- Designed to operate in industrial and outdoors environments
- Software allows export of clean and accurate datasets into PolyWorks®, Geomagic®, Cyclone®, RealWorks® and other applications for processing
- Easy to set up and move, fits into optional carrying case approved for cabin luggage for most domestic airlines
- Optional camera system with 150 megapixel equivalent color image
- Upgradable to ER\_100HSX



Recommended Work Range, m	1.5-100
Ambiguity Range, m	180
Angular Uncertainty, arc sec	15
Range Noise, 1 sigma, mm; 90% reflectivity	0.25@10m
Range Noise, 1 sigma, mm; 10% reflectivity	0.6@10m
Range Uncertainty, mm	<0.7@15m

## Sample scan with color data mapped to point cloud



Images courtesy of MD3D and Mimic Studios, Inc.

**Scan time:** 2 hours, 5 stations, 400 million points

**Software used:** Surphaser software for registration and color mapping

**Processing time:** 1.5 hours

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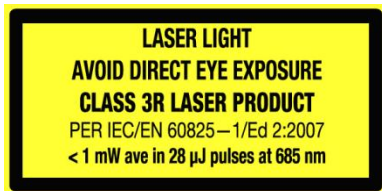
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# Surphaser® 50HSX Specification

Scanner Type	Phase Shift, Hemispherical Scanner with 360° x 270° field of view
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## SYSTEM PERFORMANCE

Distance Measurement Method:	Phase-shift
Laser Wavelength	685 nm
Laser Type	CW
Laser Class: (IEC EN60825-1:2007)	Class 3R
Scan Rate (points/second)	208,000 - 1,200,000
Internal Coordinate Representation Unit (mm)	0.001
<b>Angular position data</b>	
Internal Vertical Angular Representation Unit	1 arc sec
Internal Horizontal Angular Representation Unit	1 arc sec
<b>Scan density control: software selectable</b>	
Min. Vertical Point Density (points/degree)	24
Min. Horizontal Point Density (points/degree)	10
Max Vertical Point Density (points/degree)	90
Max Horizontal Point Density (points/degree)	90
Full Volume Scan Time (minutes, at 7200x7200 density)	4.5
<b>Field-of-view (per scan, software selectable)</b>	
Horizontal (maximum)	360°
Vertical (maximum)	270°
<b>Physical dimensions and weight</b>	
Weight (kg)	11
Dimensions 381mm L x 219mm H x 120mm W	



## STANDARD ACCESSORIES

- Built-in scan controller, allows scanner control, operation, and data collection without a laptop
- Built-in tilt sensor
- Shipping container
- USB 2.0 cable
- AC Adapter 110/240 AC, 19-24V DC, 3.5A
- Tripod Adapter
- Li-Ion 14V, 90Wh, 2.2lb Battery, provides 1.5 to 2 hours of continuous operation
- Battery charger
- 1 year warranty and Basic Support contract

## OPTIONAL ACCESSORIES

- SMR-compatible B&W targets and target case
- Scanner carrying case, size approved for most domestic airlines cabin requirements, weight restrictions vary, please check with airline(s) for up-to-date regulations
- Tripod
- Camera system with 150 megapixel equivalent color image

## HOST COMPUTER REQUIREMENTS (Optional for Model with Built-In Controller)

- Minimum Configuration:
- Processor: 1.8 GHz or greater Pentium-compatible;
- System memory RAM 1GB or greater, 2GB recommended
- OS: Windows XP, Vista, Windows 7, Windows 8; 32-bit or 64-bit editions
- USB 2.0 port

## ENVIRONMENTAL

- Calibrated Operating Temperature: 5°C to 45 °C, non-condensing humidity

## POWER SUPPLY

- 14-24V DC, 45W (No Built-in Controller)
- 14-24V DC, 55W (With Built-in Controller)

## Surphaser® 50HS, ER\_100 Configuration Options

Configuration	50HS <sup>4</sup>	ER_100HQ <sup>5</sup>	ER_100HS <sup>5</sup>
Recommended Work Range (m)	1.5-100	1.5-50	1.5-100
Ambiguity Range (m)	180	180	180
Angular Uncertainty <sup>1,3</sup> (arc sec)	15	15	15
Range Noise <sup>1,2</sup> , mm; 90% reflectivity	0.25@10m	0.07@10m	0.25@10m
Range Noise <sup>1,2</sup> , mm; 10% reflectivity	0.6@10m	0.4@10m	0.6@10m
Range Uncertainty <sup>3</sup> , mm	<0.7@15m	<0.7@15m	<0.7@15m

<sup>1</sup> All Noise and uncertainty figures are for 1 sigma level at 208KP/s

<sup>2</sup> Range Noise -- local (short term) range variation, Lambertian surface

<sup>3</sup> Evaluated with contrast target best fit

System Parameters may be changed without notice; parameters are rated independently

<sup>4</sup>50HS can be upgraded to ER\_100

<sup>5</sup>ER\_100HQ and ER\_100HS are software selectable options based on the same hardware model ER\_100