SURPHASER® — 3D LASER SCANNERS

AND OEM PRODUCTS FOR LASER SCANNER MANUFACTURERS

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® 100HSX

- Sub-millimeter accuracy scanners with scan rate of up to 1 million points per second and scan ranges between 1m and 50m

- Designed to operate in industrial and outdoors environments

- Software allows export of clean and accurate data sets 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 built-in scan controller and battery adapter

- Optional camera system with 60 megapixel equivalent color image, includes automatic color data mapping
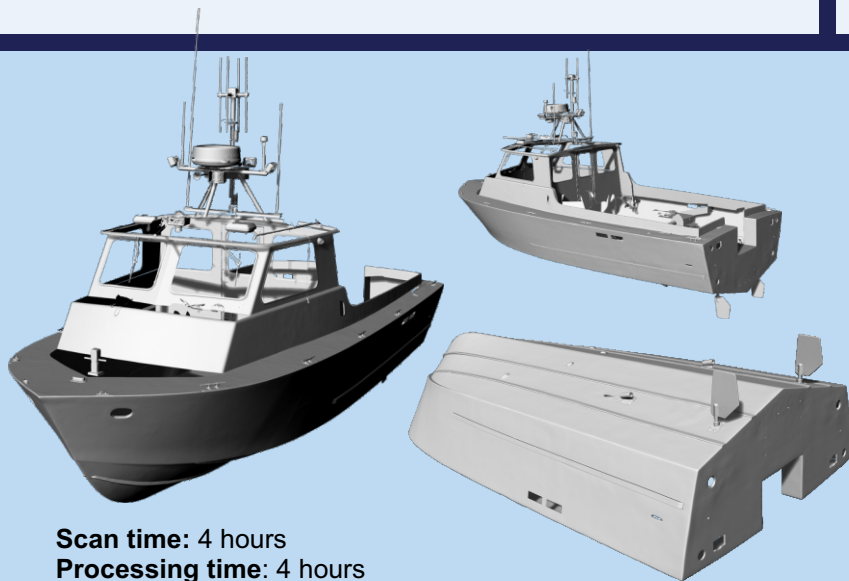
FOR 3D SCANNER DEVELOPERS AND MANUFACTURERS:

OEM products based on advanced Surphaser technology. Options include everything for rapid development of customized 3D laser scanner system best suited for particular application.

SURPHASER® SR, IR_100 CONFIGURATION OPTIONS

Configuration	SR_100	IR_100HQ*	IR_100HS*
Recommended Work Range, m	1-7	1-35	1-50
Ambiguity Range, m	90	90	90
Angular Uncertainty, arc sec	15	15	15
Range Noise, 1 sigma, mm; 90% reflectivity	0.024@4m	0.07@10m	0.16@10m
Range Noise, 1 sigma, mm; 10% reflectivity	0.088@4m	0.41@10m	0.3@10m
Range Uncertainty, mm	<0.3@3m	0.35@5m	<0.7@15m

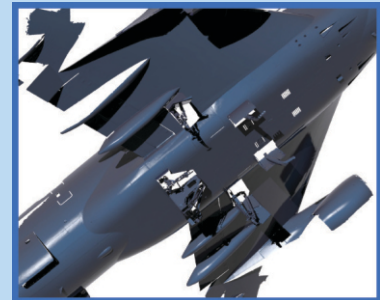*IR_100HQ and IR_100HS are software selectable options based on the same hardware model IR_100

BOEING 747 FUSELAGE SURFACE MODELING

Images courtesy of Mimic Studios, Inc.

12 scans, 380 millions points

Scan time: 3 hours

Processing time: 5 hours polygon model creation; **6 hours** CAD modeling fuselage skin from scan data

Scan time: 4 hours
Processing time: 4 hours

Surphaser® 100HSX SR and IR

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

SYSTEM SPECIFICATIONS

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 – 800,000
Internal Coordinate Representation Unit (mm)	0.001
Angular position data	
Internal Vertical Angular Representation Unit	1 arc sec
Internal Horizontal Angular Representation Unit	1 arc sec
Scan density control: software selectable	
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
Field-of-view (per scan, software selectable)	
Horizontal (maximum)	360º
Vertical (maximum)	270º
Physical dimensions and weight	
Weight (kg)	11
Dimensions 381mm L x 219mm H x 120mm W	

LASER LIGHT
AVOID DIRECT EYE EXPOSURE
CLASS 3R LASER PRODUCT
PER IEC/EN 60825−1/Ed 2:2007
< 1 mW ave in 28 µJ pulses at 685 nm
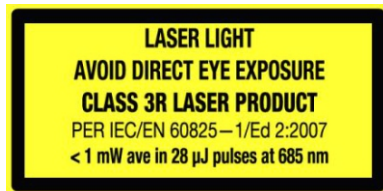
STANDARD ACCESSORIES, MODEL 100HSX

- Shipping container
- Surphaser USB 2.0 cable
- AC Adapter 110/240 AC, 14-24V DC, 3.5A
- Surphaser DC power cable
- Tripod Adapter
- Built-in scan controller, allows scanner control, operation, and data collection without a laptop
- Wi-Fi connectivity
- 2 Li-Ion 14V, 90Wh batteries, each provides 1.5 to 2 hours of operation
- 2 Battery chargers
- 1 year Warranty and Basic Support contract

OPTIONAL ACCESSORIES

- SMR-compatible B&W targets and target case
- Tilt Sensor, dual axis
- 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
- External camera system with 60 megapixel equivalent color image, includes automatic color data mapping
- Extended Warranty contract

HOST COMPUTER REQUIREMENTS
Optional for Model with Built-In Controller, minimum configuration

- Processor: 2.4 GHz or greater Pentium–compatible;
- System memory RAM 8GB or greater, 16GB recommended for processing
- OS: Windows 8 or 10; 32-bit or 64-bit editions
- USB 2.0 port or fully compliant USB 3.0 port

ENVIRONMENTAL

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

POWER SUPPLY

- 14-24V DC, 90W

Surphaser® SR, IR_100 System Performance

Configuration	SR HQ	IR HQ[4]	IR HS[4]
Recommended Work Range (m)	1-7	1-35	1-50
Ambiguity Range (m)	90	90	90
Angular Uncertainty[1,3] (arc sec)	15	15	15
Range Noise[1,2], mm; 90% reflectivity	0.024@4m	0.07@10m	0.16@10m
Range Noise[1,2], mm; 10% reflectivity	0.088@4m	0.41@10m	0.3@10m
Range Uncertainty[3], mm	<0.3@3m	<0.35@5m	<0.7@15m

[1] All noise and uncertainty figures are for 1 sigma level
[2] Range noise -- local (short term) range variation, Lambertian surface
[3] Evaluated with contrast target best fit at data rate of 208,000 points per sec

[4] IR HQ and IR HS are software selectable options based on the same hardware model 100HSX IR
System parameters may be changed without notice; parameters are rated independently

mimic 3D SCANNING