

# Surphaser® 410

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

Distance Measurement Method	Phase-shift
Laser Wavelength	1550 nm
Laser Type	CW
Laser Class: (IEC EN60825-1:2007)	Class 1
Scan Rate, software selectable(points/second)	208,000/ 832,000 pps
Internal Coordinate Representation Unit	0.001 mm
<b>Angular position data</b>	
Beam diameter at Aperture	3 mm
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)	12 ppd
Min. Horizontal Point Density (lines/degree)	7 lpd
Max Vertical Point Density (points/degree)	360 ppd
Max Horizontal Point Density (lines/degree)	78 lpd
360° Scan Time, HP mode (832,000 pps at 7200x7200 density)	1.2 min
360° Scan Time, HQ, HS modes (208,000 pps at 7200x7200 density)	4.5 min
<b>Field-of-view (per scan, software selectable)</b>	
Horizontal (maximum)	360°
Vertical (maximum)	270°
<b>Physical dimensions and weight</b>	
Weight with battery	5.8 kg
Dimensions 299mm L x 200mm H x 118mm W	

**CLASS 1  
LASER PRODUCT**

## Surphaser® 410 System Performance

Configuration (software selectable, available on all Surphaser 410 units)	410_HQ <sup>4</sup> 208,000 pps	410_HS <sup>4</sup> 208,000 pps	410_HP <sup>4</sup> 832,000 pps
Recommended Work Range (m)	0.4-70	0.4-70	0.4-70
Ambiguity Range (m)	180	360	180
Angular Uncertainty <sup>1,3</sup> (arc sec)	25	25	25
Range Noise <sup>1,2</sup> , mm; 90% reflectivity	0.06@0.4m-30m	0.09@0.4m-30m	0.15@0.4m-30m
Range Noise <sup>1,2</sup> , mm; 10% reflectivity	0.15@0.4m-15m	0.15@0.4m-15m	0.3@1m-15m
Range Uncertainty <sup>3</sup> , mm	<0.7@15m	<0.9@15m	<0.9@15m

<sup>1</sup> All noise and uncertainty figures are for 1 sigma level

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

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

## STANDARD ACCESSORIES, MODEL 410

- Built-in scan controller, allows direct scanner control and data collection without a laptop
- Wi-Fi connectivity
- Tilt sensor, dual axis
- Shipping case
- Surphaser USB 2.0 cable
- AC Adapter 110/240 AC, 14-24V DC, 3.5A
- Surphaser DC power cable
- Tripod Adapter
- Two Li-Ion 14V, 49Wh batteries, each provides about 1 hour of operation
- 2-bay charger
- 1-year Limited Warranty and Basic Support contract

## OPTIONAL ACCESSORIES

- One panoramic or two fully integrated cameras; software for automatic color data mapping and dynamic exposure adjustment
- SMR-compatible targets and targets' carrying 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
- External hot-swappable extended battery, allows uninterrupted operation
- Extended Warranty contract

## HOST COMPUTER REQUIREMENTS

### Optional, minimum configuration

- Processor: 2.4 GHz or greater Pentium-compatible;
- System memory RAM 16GB or greater, 32GB recommended for processing
- OS: Windows 11
- USB 2.0 port or fully compliant USB 3.0 port

## ENVIRONMENTAL

- Calibrated operating temperature: 5°C to 40 °C, non-condensing humidity

## POWER REQUIREMENT

- 15-24V DC, 90W