

Surphaser® 410HSX

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

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
Angular position data	
Beam diameter at Aperture	3 mm
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)	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
Field-of-view (per scan, software selectable)	
Horizontal (maximum)	360°
Vertical (maximum)	270°
Physical dimensions and weight	
Weight with battery	5.8 kg
Dimensions 299mm L x 200mm H x 118mm W	

**CLASS 1
LASER PRODUCT**

STANDARD ACCESSORIES, MODEL 410HSX

- Built-in scan controller, allows direct scanner control and data collection without a laptop
- Wi-Fi connectivity
- Two 5MPix built-in cameras; software for automatic color data mapping is included
- Tilt sensor, dual axis
- Shipping container
- Surphaser USB 2.0 cable
- AC Adapter 110/240 AC, 15-21V DC, 4.5A
- 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

- 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, each provides about 2 hours of operation
- Extended Warranty contract

HOST COMPUTER REQUIREMENTS

Optional, 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 40 °C, non-condensing humidity

POWER REQUIREMENT

- 14-24V DC, 90W

Surphaser® 410HSX System Performance

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

⁴ 410_HQ, 410_HS and 410_HP are software selectable options, all three are available on all Surphaser 410 units. System parameters may be changed without notice; parameters are rated independently