Unprecedented performance in ultra-high speed laser scanning

**Productivity and Accuracy**
An innovative combination of advanced time-of-flight range measurement plus modern Waveform Digitizing (WFD) technology enables the compact Leica ScanStation P20 to achieve ultra-high scan speeds and low-noise performance at extended range (to 120 m). Together with high-accuracy angular measurements and survey-grade tilt compensation, Leica ScanStation P20 delivers unprecedented ultra-high speed scan data quality for as-built and scene surveys.

**Scan up to 1 million points per second**
Leica ScanStation P20 is the ideal instrument when very short time windows are available for capturing High-Definition Survey™ data or when ultra-high density, full dome scan data is needed for client deliverables.

**Unmatched environmental capabilities**
Developed and manufactured by Leica Geosystems, Leica ScanStation P20 lets users apply ultra-high speed scanning in operating temperatures ranging from -20°C to +50°C. Moreover, with an Ingress Protection rating of IP54 and a an eye-safe laser rating, users can reap the benefits of ultra-high speed scanning for even more sites and projects.

**“Check & Adjust” for added confidence**
Leica ScanStation P20 is the first laser scanner to feature a valuable “Check & Adjust” capability. Instead of sending the instrument to a service center, users can electronically check the accuracy of their ScanStation P20 themselves and automatically adjust instrument parameters to ensure the highest level of performance.
Leica ScanStation P20
Product Specifications

General
Instrument type
Compact, ultra-high speed pulsed laser scanner with survey grade accuracy, range and field-of-view, integrated camera and laser plummet
User interface
Onboard control, notebook or tablet PC, PDA
Data storage
Integrated solid-state drive (SSD) or external USB flash drive
Camera
Auto-adjusting, integrated high-resolution digital camera with zoom video

System Performance
Accuracy of single measurement
3D Position Accuracy
Linearity error 3 mm at 50 m; 6 mm at 100 m ≤ 1 mm
Angular accuracy 8° horizontal; 8° vertical
Target acquisition* 2 mm standard deviation up to 50 m
Dual-axis compensator
Selectable on/off, resolution 1°, dynamic range 4°–5°, accuracy 1.5°

Laser Scanning and Imaging System
Type
Ultra-high speed time-of-flight enhanced by Waveform Digitizing (WFD) technology
Wavelength
808 nm (invisible) / 658 (visible)
Laser class
2 (in accordance with IEC 60825-1)
Beam divergence 0.2 mrad
Beam diameter at front window ≤ 2.8 mm

Range
Up to 120 m; 18% reflectivity (minimum range 0.4 m)
Scan rate
Up to 1,000,000 points/s
Range noise**
Range Black (10%) Gray (28%) White (100%)
10 m 0.8 mm rms 0.5 mm rms 0.4 mm rms
25 m 1.0 mm rms 0.6 mm rms 0.5 mm rms
50 m 2.8 mm rms 1.1 mm rms 0.7 mm rms
100 m 9.0 mm rms 4.3 mm rms 1.5 mm rms

Scan time and resolution (hh:mm:ss)
7 pre-set point spacings (mm at 10 m)
Spacing Quality level
50 00:20 00:20 00:28 ----
25 00:33 00:33 00:53 01:43
12.5 00:58 01:44 03:24 06:46
6.3 01:49 03:25 06:46 13:30
3.1 03:30 06:47 13:30 26:59
1.6 13:33 27:04 54:07 ----
0.8 54:07 1:48:13 ---- ----

Field-of-View
Horizontal 360°
Vertical 270°
Aiming/Sighting
Parallax-free, integrated zoom video
Scanning optics
Vertically rotating mirror on horizontally rotating base
Up to 50 Hz with internal battery
Up to 100 Hz with external power supply
Data storage capacity
256 GB onboard solid-state drive (SSD) or external USB device

Communications
Gigabit Ethernet or integrated Wireless LAN
Imaging
5 megapixels per each 17° x 17° colour image; streaming video with zoom; auto-adjusts to ambient lighting
Onboard display
Touchscreen control with stylus; full color VGA graphic display (440 x 480 pixels)
Level indicator
External bubble, electronic bubble in onboard software
Data transfer
Ethernet, WLAN or USB 2.0 device
Laser plummet
Laser class 1 (IEC 60825-1)
Centering accuracy: 1.5 mm at 1.5 m
Laser dot diameter: 2.5 mm at 1.5 m
Selective ON/OFF

Electrical
Power supply
24 V DC, 100 – 240 V AC
Power consumption
40 W typical
Battery type
Internal: Li-Ion; External: Li-Ion
Power ports
Internal: 2; External: 1 (simultaneous use, hot swappable)
Duration
Internal: ≥ 7 h (2 batteries); External: ≥ 8.5 h (room temp.)

Environmental
Operating temperature
–20° C to +50° C / –4° F to 122° F
Storage temperature
–40° C to +70° C / –40° F to 158° F
Lighting
Fully operational between bright sunlight and complete darkness
Humidity
Non-condensing
Dust/Humidity
IP54 (IEC 60529)

Physical
Dimensions (D x W x H)
238 mm x 358 mm x 395 mm / 9.4" x 14.1" x 15.6"

Battery (internal)

Dimensions (D x W x H)
Weight

Battery (external)

Dimensions (D x W x H)
Weight

AC Power Supply

Dimensions (D x W x H)
Weight

Mounting
Upright or upside down

Standard Accessories Included
Scanner transport case
Tribrach (Leica Geosystems Professional Series)
Battery charger / AC power cable, car adapter, daisy chain cable
Data cable
Height metre and distance holder for height metre
1 year CCP Basic support contract

Additional Accessories & Services
BiW scan targets and target accessories
Range of Customer Care Products (CCPs) that include Support, Hardware & Software maintenance and Extended warranty.
External battery with charging station, AC power supply and power cable
Professional charger for internal batteries
AC power supply for scanner
Tripod and tripod stand
Upside down mounting adapter

Control Options
Full colour touchscreen for onboard scan control.
Remote control: Leica CS10/CS15 controller or any other remote desktop capable device, including iPad, iPhone and other SmartPhones.

Ordering Information
Contact your local Leica Geosystems representative or an authorized Leica Geosystems dealer.

All specifications are subject to change without notice.
All accuracy specifications are one sigma unless otherwise noted.
* Algorithmic fit to planar B&W targets
** Detailed explanation on request

Leica ScanStation P20 - www.leica-geosystems.com/hds