Leica ScanStation P20
Industry’s Best Performing Ultra-High Speed Scanner

Unprecedented performance in ultra-high speed laser scanning

Productivity & Accuracy
An innovative combination of advanced time-of-flight range measurement plus modern Waveform Digitising (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 an eye-safe laser class 1 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 centre, 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 surgery-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
3 mm at 50 m; 6 mm at 100 m

Linearity error
± 1 mm

Angular accuracy
8° horizontal; 8° vertical

Target acquisition*
3 mm standard deviation up to 50 m

Dual-axis compensator
Selectable on/off, resolution 1°, dynamic range +/- 5°, accuracy 1.5°

Laser Scanning and Imaging System

Type
Ultra-high speed time-of-flight enhanced by Waveform Digitising (WDS) technology

Wavelength
808 nm (invisible) / 658 (visible)

Laser class
808 nm (invisible) / 658 nm (visible)

Beam divergence
0.2mrad

Beam diameter at front window
± 2.8 mm

Range
Up to 120 m; 38% reflectivity (minimum range 0.4 m)

Scan rate
Up to 1’000’000 points/s

Range noise**

<table>
<thead>
<tr>
<th>Range</th>
<th>Black (10%)</th>
<th>Gray (28%)</th>
<th>White (100%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 m</td>
<td>0.8 mm rms</td>
<td>0.5 mm rms</td>
<td>0.4 mm rms</td>
</tr>
<tr>
<td>25 m</td>
<td>1.0 mm rms</td>
<td>0.6 mm rms</td>
<td>0.5 mm rms</td>
</tr>
<tr>
<td>50 m</td>
<td>2.8 mm rms</td>
<td>1.1 mm rms</td>
<td>0.7 mm rms</td>
</tr>
<tr>
<td>100 m</td>
<td>9.0 mm rms</td>
<td>4.3 mm rms</td>
<td>1.5 mm rms</td>
</tr>
</tbody>
</table>

Scan time and resolution (hh:mm:ss)

<table>
<thead>
<tr>
<th>Pre-set point spacings (mm at 10 m)</th>
<th>Spacing</th>
<th>Quality level</th>
</tr>
</thead>
<tbody>
<tr>
<td>293 mm 44 mm</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>50 mm 20 mm</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>25 mm 10 mm</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>12.5 mm 5 mm</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>6.3 mm 2.5 mm</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>3.1 mm 1.25 mm</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>1.6 mm 0.647 mm</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>0.8 mm 0.567 mm</td>
<td>3</td>
<td>8</td>
</tr>
</tbody>
</table>

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-colour VGA, graphic display (640 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 (IEC60825-2014)

Centering accuracy: 1.5 mm at 1.5 m

Laser dot diameter: 2.5 mm at 1.5 m

Selectable on/off

Electrical

Power supply
24 V DC, 100 – 240 V AC

Power consumption
48 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

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

Weight
11.9 kg / 26.2 lbs, nominal [w/o batteries]

Battery (internal)
Dimensions (D x W x H) 40 mm x 72 mm x 77 mm / 1.6" x 2.8" x 3.0"

Weight
0.4 kg / 0.9 lbs

Battery (external)
Dimensions (D x W x H) 95 mm x 248 mm x 60 mm / 3.7" x 9.8" x 2.4"

Weight
1.9 kg / 4.2 lbs

AC Power Supply
Dimensions (D x W x H) 170 mm x 85 mm x 42.5 mm / 6.6" x 3.3" x 1.6"

Power ports
0.86 kg / 1.9 lbs

Mounting
Upright or upside down

Standard Accessories Included

Scanner transport case
Tribrach (Leica Geosystems Professional Series)

4 x Internal batteries

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

B&W 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 authorised Leica Geosystems dealer.

Leica Geosystems AG
Heerbrugg, Switzerland
www.leica-geosystems.com/hds