

Laser Sensor Specifications

Laser scanner: Riegl LMS-Q560

Beam deflection: pyramid. polygon mirror

Number of facets: 4

Scan pattern: parallel scan lines, saw tooth

Field of view: Upto ± 30.0 degrees optional Programmable in 1 degree increments

Angular resolution: 0.001 degrees

Range accuracy: ≤ 20 mm (1σ) ± 20 ppm flat surface, normal to the beam

Laser pulse rate: Up to 200,000 Hz PRF

Measurement rate: 100,000 Hz (45 deg.)
133,000 Hz (60 deg.)

Scan frequency: 5 Hz to 160 Hz

Maximum range: 1,800 m flat surface, $\rho = 60\%$ (PRF = 50kHz)
1,200 m (PRF = 100kHz)
700 m (PRF = 200kHz)

Minimum range: 30 m

Max. op altitude: full wave form mode limited to approximately 1,000 m depending on the structure of the ground

Swath width: Upto 115 % of op. altitude (60 degrees FOV)

Beam divergence: 0.5 mrad
Spot diameter 50 cm @ 1,000 m diameter on ground

Laser wavelength: 1,550 nm

Wave form mode: unlimited number of returns
1 GHz, 16 bit dynamic range

Target separation: 0.6m (wave form mode) at single pulse

Point accuracy: 19 cm / 7 cm (1σ)
horizontal / vertical @ 800 m AGL
excluding GPS errors

Point spacing: 200 m AGL @ 20 m/s
0.18m / 0.18m \rightarrow 30p.sqm
400 m AGL @ 20 m/s
0.25m / 0.25m \rightarrow 15p.sqm
600 m AGL @ 50 m/s
0.57m / 0.57m \rightarrow 3.0p.sqm
800 m AGL @ 50 m/s
0.81m / 0.81 m \rightarrow 1.5p.sqm
1000 m AGL @ 60 m/s
0.90m / 0.90 m \rightarrow 1.2p.sqm

Pulse resolution: 0.1 m (wave form mode)
pulse width resolution

Intensity capture: 16 bit per return amplitude

Eye save: class 1 (eye-safe)

Digital Camera Specifications

Make: Rollei

Array size: 5,428 x 7,228 pixel
along x across flight line

Pixel size: 0.006 mm

Filter array: color or colorIR (CIR)

Lenses: 50 mm (52 degree FOV)

Exposure control: manual, aperture or shutter priority

Light metering: center weighted average

Shutter: electronically controlled focal plane

Shutter speed: 125 – 1000

Aspect ratio: 1:1

Exposure comp: ± 2 EV in 1/3 steps

Max. Exp. rate: 3.0 sec.

Calibration: radiometric with full report

Operating altitude: 0 – 6,000 m

Image pixel size: down to 0.03 m

Position accuracy: Down to 0.03 m

