

HARRIER 24

Specification



Specification Laser Sensor

Laser scanner:	Riegl LMS-Q240i
Beam deflection:	cylindric. polygon mirror
Number of facets:	4 (60 degree FOV) 3 (80 degree FOV)
Scan pattern:	parallel scan lines, saw tooth
Field of view:	± 30 degrees ± 40 degrees optional
Angular resolution:	0.005 degrees
Range accuracy:	≤ 20 mm (1σ) ± 20ppm flat surface, normal to the beam
Laser pulse rate:	30,000 Hz PRF
Measurement rate:	10,000 Hz
Scan frequency:	6 - 80Hz (60 deg. FOV) 5 - 60Hz (80 deg. FOV)
Maximum range:	650 m, flat surface, ρ = 80% 320 m, flat surface, ρ = 20%
Minimum range:	2 m
Range resolution	5 mm
Operating altitude: @ flat surface, ρ = 20%	10 m - 277 m AGL (@ FOV = 60 degrees) 10 m - 245 m AGL (@ FOV = 80 degrees)
Operating altitude: @ flat surface, ρ = 80%	10 m - 563 m AGL (@ FOV = 60 degrees) 10 m - 500 m AGL (@ FOV = 80 degrees)
Swath width:	115 % of op. altitude (60 degrees FOV) 168 % of op. altitude (80 degrees FOV)
Beam divergence:	2.7 mrad
Spot diameter	54 cm @ 200 m diameter on ground
Laser wavelength:	905 nm
Point accuracy:	12 cm / 6 cm (1σ) horizontal / vertical @ 200 m AGL without GPS errors enhancement by differ- ent IMU types possible

Range capture: first or last return or alternating

Point spacing table shows across and along point distance and the resulting points per square meter for a specific flight height for 60 degree FOV.
Example:

50 m AGL @ 20 m/s
0.34m / 0.34m → 8.7p.sqm
at a flight height of 50m and a flight speed of 20 m/s, the resulting point distance will be 34 cm across and 34 cm along flight line and the point density will be 8.7 points per square meter

Point spacing table:

50 m AGL @ 20 m/s
0.34m / 0.34m → 8.7p.sqm
100 m AGL @ 20 m/s
0.48m / 0.48m → 4.3p.sqm
150 m AGL @ 20 m/s
0.60m / 0.60m → 2.9p.sqm
200 m AGL @ 20 m/s
0.68m / 0.68 m → 2.2p.sqm
400 m AGL @ 20 m/s
1.0m / 1.0 m → 1.0p.sqm

Intensity capture: 8 bit per return
return amplitude

Eye save: class 3R (eye-safe)
0 meter

Specification Digital Camera (Option)

Model:	Applanix DSS or Rollei AIC
Pixel:	22M / 39M
Array size:	up to 5,428 x 7,228 pixel along x across flight line
Pixel size:	0.0068 mm
Filter array:	color (RGB) or colorIR (CIR) or IR only
Lenses:	55 mm (37 degree FOV) 45 mm (45 degree FOV) 35 mm (55 degree FOV) lenses made by Zeiss or Rodenstock
Exposure control:	manual, aperture or shutter priority

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Light metering:	center weighted average
Shutter:	electronically controlled focal plane
Shutter speed:	125 – 4,000 (DSS) 125 – 1,000 (Rollei)
Aspect ratio:	1:1
Exposure compensation:	± 2 EV in 1/3 steps
Max. Exp. rate:	2.5 sec.
Calibration:	radiometry and geometry with full report
Operating altitude:	0 – 6,000 m
Image pixel size:	down to 0.03 m
Images scales:	1:250 to 1:10,000
Position accuracy:	Down to 0.03 m
Data logger:	320 Gbyte removable hard disc

Specification Positioning And Attitude System

Standard POS/AV:	Applanix 410
Positioning system:	Applanix POS/AV 410
IMU sampling rate:	300 Hz
IMU accuracy:	0.008/0.008/0.015 roll/pitch/heading
IMU accuracy:	0.005 velocity
GPS:	12 channel dual frequency, low noise, 10 Hz raw data
Positioning system:	Applanix POS/AV 510 (optional)
IMU sampling rate:	200 Hz
IMU accuracy:	0.005/0.005/0.008 roll/pitch/heading
IMU accuracy:	0.005 velocity
GPS:	12 channel dual frequency, low noise, 10 Hz raw data

Specification Sensor Rack

Weight :	30 kg, including IMU, laser and DSS
Dimensions rack:	50 x 48 x 35 cm

Vibration isolated case mounts directly on the floor, custom specific housing possible

Specification Computer Rack

Weight :	25 kg, including POS/AV, DSS and flight management system
Dimensions rack:	40 x 40 x 45 cm
Vibration isolated case mounts directly on the floor, custom specific housing possible	

Operational Parameters

Log time:	>> 8 h for laser data and image data in parallel
Power:	28 V DC, 15 A max. with camera and flight management system
Temperature:	-0 - +40 deg. (op) -10 - +50 deg. (stor.)
Humidity:	0 % – 90 % non-condensing

Software Description

Applanix PosPac software suite for direct georeferencing, consisting of:

- data extraction and display tools
- GPS aided inertial post processing tools
- requires Windows XP

Applanix DSS software suite for raw image processing of the DSS, consisting of:

- Mission planning and configuration
- photogrammetry tools
- image view
- mission view
- requires Windows XP

TopPIT DSM/DTM software suite for:

- Lidar data (DSM, DTM) processing

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production of x-y-z coordinates from distance, attitude and position

transformation into local coordinate system

point cloud classification

transformation of point clouds into a regular grid applying selectable sorting and filtering schemes

filtering of objects such as houses or trees (automated and manually)

requires Linux

TopPIT RGB/CIR software suite for:

complete true-ortho image processing (RGB, CIR)

georeferencing and orthorectification

radiometric correction

true-ortho generation also supports digital frame camera images

requires Linux

TopPIT Tools software tools for:

data handling

project organization

Data visualization

requires Linux

Tracker software suite for:

mission planning

pilot mission guidance

mission tracking

requires Windows XP

Service Description

Installation: on-site support by experts of TopoSys for sensor installation

Setup: on-site support by experts of TopoSys for software installation and setup and organization of the data processing center

Training: on-site training by experts of TopoSys for sensor installation, mission planning, sensor operation, trouble shooting, project organization and project handling, data processing

Extended training: on-site training and after sales support by experts of TopoSys for all aspects of Lidar and image surveys, projects and applications

Maintenance: maintenance program for sensor hardware and processing software ensures full operation and accuracy

Support: support center for permanent customer support by experts of TopoSys

Specifications subject to change without notice. Errors and omissions excepted.

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