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RECON-F8

The **RECON-F8** is an advanced, lightweight aerial LiDAR surveying solution designed specifically for small to mid-size drones such as the DJI M350. The **RECON-F8** seamlessly combines cutting-edge lightweight LiDAR technology with a high-accuracy drone optimized GNSS-INS system and an industrial-grade full-frame orthophoto camera all in a compact survey-grade 3D laser mapping solution. Combined with Phoenix LiDAR flight planning and post processing software, the **RECON-F8** an efficient and cost effective solution for 3D data acquisition and processing.

FEATURES

- Weighing in at just 2.2 kg, the Recon-F8 is ideal for small to mid-size drones such as the DJI M350
- Integrated 45 MP full-frame calibrated orthographic RGB camera provides high resolution image mapping textures for efficient 3D model reconstruction with realistic point cloud colorization
- The powerful laser range capability combined with a wide 100° horizontal field yields a 30% - 40% increase in data acquisition efficiency over competing solutions with a narrow 75° FOV



QUICK SPECS

ABSOLUTE ACCURACY ⁽¹⁾⁽²⁾⁽³⁾
2 - 3.5cm RMSEz @ 120m

INTRASWATH PRECISION ⁽¹⁾⁽²⁾⁽⁴⁾
2.5 cm RMSDz @ 120m

EXAMPLE ACQUISITIONS:

UAV

- » 120 m AGL, 6 m/s, 100° FOV, 800 kHz
- » Swath Width = 286m
- » Avg. Density = -275 points/m²
- » Collection Rate = -4 km²/hr

PAYLOAD

OVERALL DIMENSIONS (L x W x H)	24 x 10.2 x 12.2 cm
POWER CONSUMPTION	50W typical
WEIGHT	2.2 kg / 4.8 lbs
OPERATING TEMPERATURE	-20° to +55°C (-4° to +131°F)
OPERATING VOLTAGE	14-30 V DC

LIDAR SENSOR

LASER WAVELENGTH	1535 nm (CLASS 1)
RANGE MIN	5m
RANGE MAX	600m at 20% reflectivity, 100 kHz PRR
PULSE REPETITION RATE	100 to 2000 kHz
SCAN SPEED	30 - 300 lines/second
MAX RETURN COUNT	7
BEAM COUNT	3 facet rotating mirror
BEAM DIVERGENCE	0.5 mrad @ 1/e
FIELD OF VIEW	100°
LASER ACCURACY ^(*)	10mm One sigma @ 100m
LASER PRECISION ^(**)	5mm One sigma @ 100m

^(*) Laser accuracy is the degree of conformity of a measured quantity to its actual (true) value.
^(**) Laser precision is the degree to which further measurements show the same results.

CAMERA

RESOLUTION	45 MP
FOCAL LENGTH (FOV)	18mm (89.84° H x 67.16° V)
SENSOR SIZE	35.9mm x 24mm (8184 x 5460)

NAVIGATION SYSTEM

CONSTELLATION SUPPORT	GPS + GLONASS + BEIDOU + GALILEO
ACCURACY POSITION	1cm + 1 ppm GNSS baseline RMS horizontal
ACCURACY ATTITUDE ⁽⁵⁾	ROLL, PITCH: 0.006° RMS HEADING: 0.019° RMS

APPLICATIONS

- UTILITIES MAPPING
- OIL & GAS SURVEYING
- RAILWAY TRACK MAPPING
- CONSTRUCTION SITE SURVEYING
- GENERAL MAPPING

(1) Approximate values based on PLS test methods described at <https://docs.phoenixlidar.com/accuracy-standards-and-quantification>.
(2) Using a 100° max downward field of view.
(3) Expected RMSEz when following the PLS recommended acquisition & processing workflow and ASPRS check point guidelines.
(4) Flat surfaces with >20% reflectivity at the laser's wavelength.
(5) Estimated post-processed accuracy with IMU-27.

MEASUREMENT PERFORMANCE

Laser Pulse Repetition Rate PRR ^{1) 5)}	100 kHz	200 kHz	300 kHz	400 kHz	800 kHz	1 MHz	2 MHz
Max. Measuring Range ^{3) 4)}							
natural targets $\rho \geq 20\%$ (e.g. Dry roads)	600m	430m	400m	360m	210m	150m	75m
natural targets $\rho \geq 80\%$ (e.g. Limestone)	1000m	750m	500m	375m	210m	150m	75m
Max. Operating Flight Altitude AGL ^{2) 5)}							
@ $\rho \geq 20\%$	380m (1246ft)	270m (885ft)	260m (853ft)	230m (754ft)	120m (395ft)	60m (197ft)	45m (147ft)

1) Rounded values.

2) Setting of intermediate PRR values possible.

3) Typical values for average conditions. Maximum range is specified for flat targets with size in excess of the laser beam diameter, perpendicular angle of incidence, and for atmospheric visibility of 23 km.

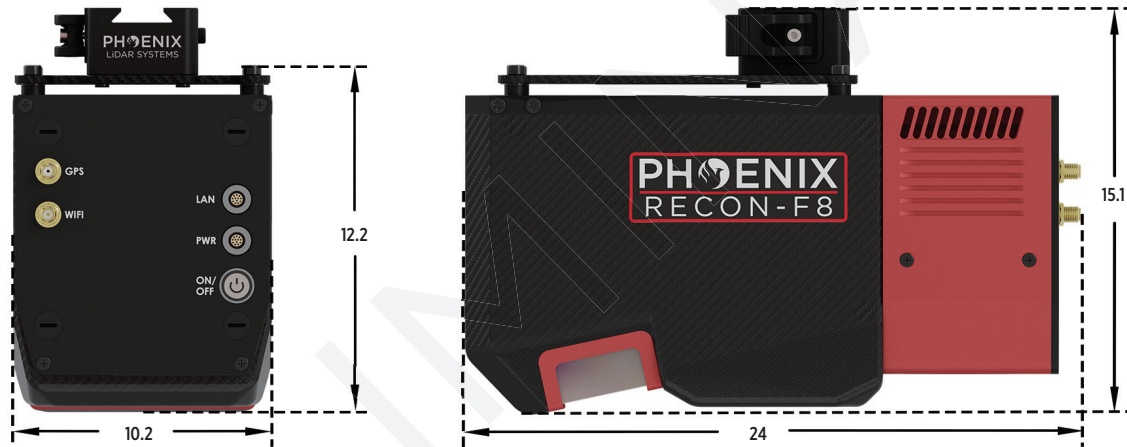
In bright sunlight, the max range is shorter than under overcast sky.

4) Ambiguity to be resolved by post-processing.

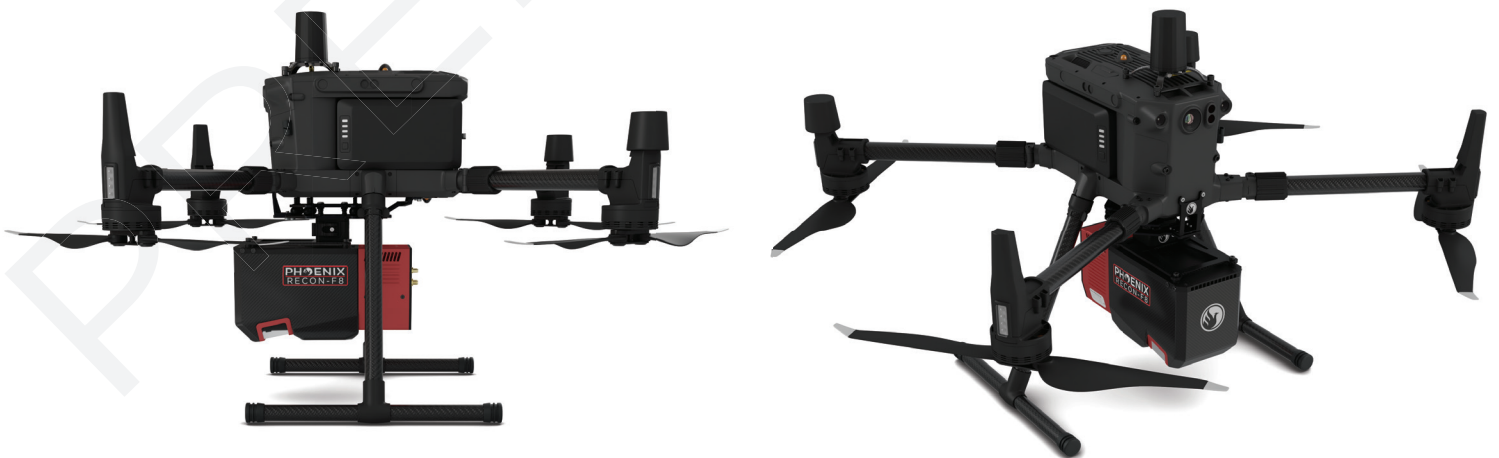
5) Flat terrain assumed, scan angle +/- 50°.

6) If more than one target is hit, the total laser transmitter power is split and, accordingly, the achievable range is reduced.

RECON-F8 DIMENSIONS (CM)



DJI M350 DRONE INTEGRATION KIT



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