XFLY

LIDAR SOLUTION

STONEX

Federica Pederzani

3D Product Manager

XFLY - Stonex LIDAR Solution

XFLY series integrates high performance **Inertial Navigation System** with **camera** and **LiDAR** for point cloud generation.

Different customer's need can be met by choosing 120- or 300-meters ranges, 2 or 3 echoes or other sensors.

As a small, lightweight and low-power system, it allows the user to fly longer, adapting to the needs of any project.

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XFLY - Component introduction

Wi-fi antenna
Web interface configuration

GNSS Aided INS
High performance, till 3cm accuracy

Antenna
Single or double antenna

LIDAR
Hesai XT-32, XT-32M2X or other sensors

Camera
24 MP | 70° FOV

Status Indicator
Working status

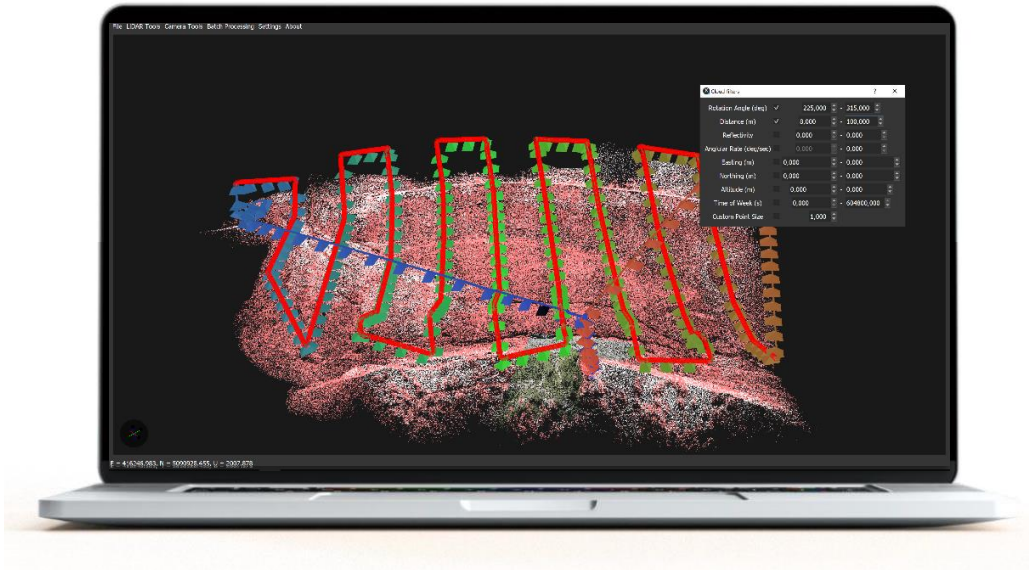
USB Port
256GB Data storage

XFLY - Software

FLY*post*

The software observes and corrects misalignments between the INS and LiDAR, and **georeferences** the data into a geographic coordinate system.

The post-processed INS **trajectory**, LiDAR scan files and camera images are converted to **colored** point clouds in LAS format for further processing.



AVAILABLE LICENSE TYPE

- Annual
- Perpetual

XFLY - Technical specifications

System	
System Vertical Accuracy	±3cm (5m/s @50m)
External Storage	256GB USB Included

	XFLY300	XFLY120
Weight	1.23kg (with camera)	1.7kg (with camera)
Dimensions	20.8 x 14.8 x 15.2 cm	20.8 x 14.2 x 17 cm
Max Flight Time (DJI M300)	35 Minutes	33 Minutes

Camera	
Model	ADTi 24MP RGB
Lens	Sony E-Mount 16mm, 70° FOV
Max Trigger Rate	2 seconds

XFLY - Technical specifications

Sensor	
Range Accuracy	±1cm
FOV (Horizontal)	360°
Channels	32

	XFLY^{300}	XFLY^{120}
Hesai Sensor	XT-32M2X	XT-32
Range	0.5 - 300m 80m @10% (all channels)	0.5 - 120m 80m @10% (c9-24) 50m @10% (c1-8; 25-32)
Max recommended AGL	120m	80m
Returns	3	2
FOV (Vertical)	40.3°	31°
Scan Angle (Vertical)	-20.8° to 19.5°	-16° to 15°
Beam Divergence	0.21° (H) - 0.047° (V)	0.04° (H) - 0.098° (V)
Pulse Rate	640k/s (single return) 1280k/s (double return) 1920k/s (triple return)	640k/s (single return) 1280k/s (dual return)

XFLY - Technical specifications

GPS-Aided INS	
Constellations	GPS, GLONASS, BEIDOU, GALILEO
Output Rates	Up to 200HZ (INS) Up to 2000HZ (IMU)
Pitch/Roll Accuracy	0.03 (RTK) 0.006 (PPK)
Heading Accuracy	0.15 (RTK) 0.03 (PPK)
Velocity Accuracy	<0.03 m/s
Position Accuracy	1cm+1ppm (RTK) 0.5cm (PPK)

XFLY - Typical mission parameters

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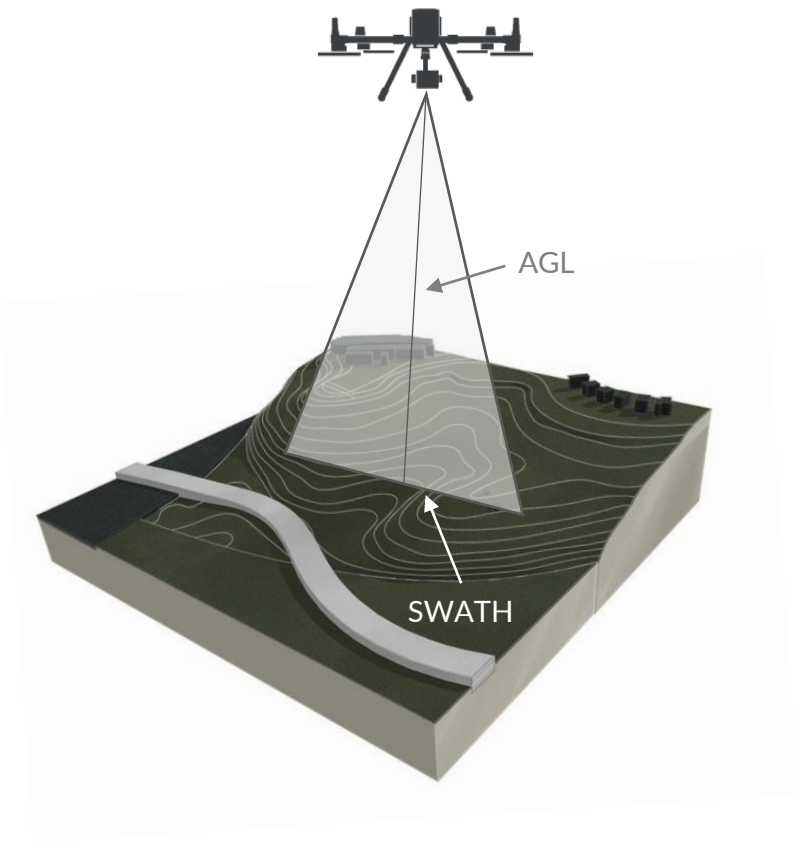
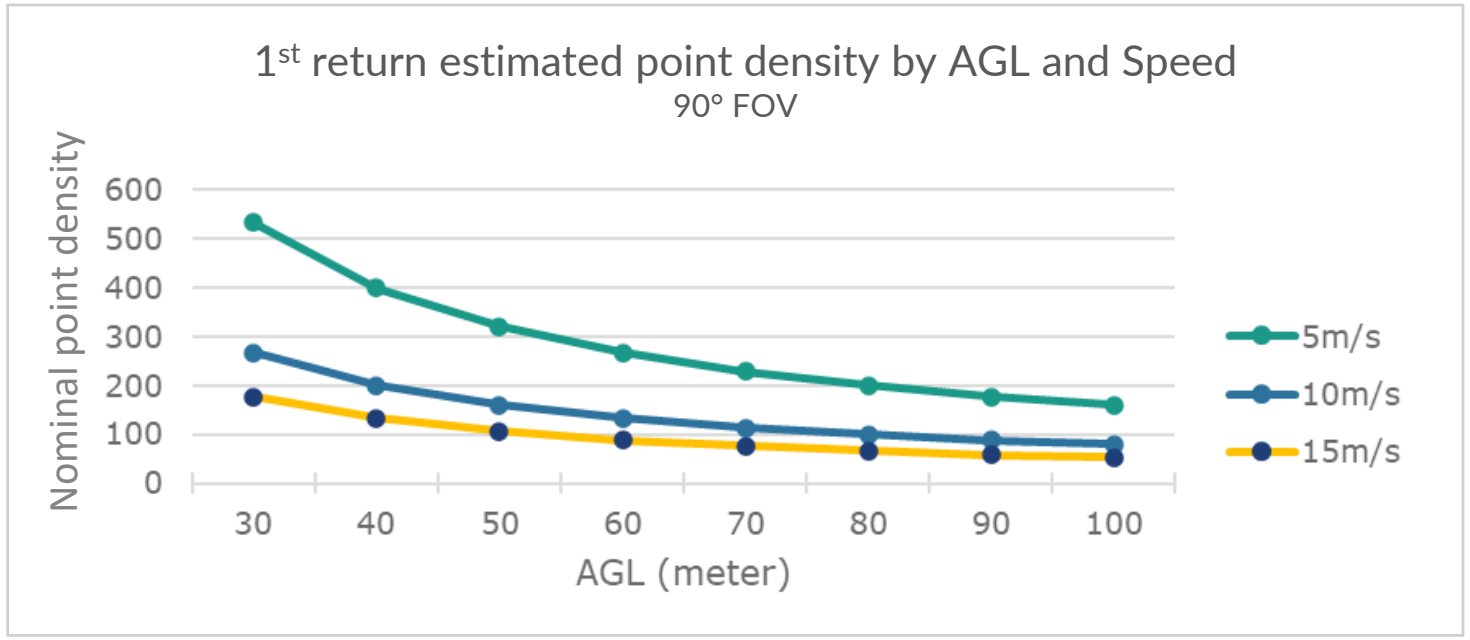
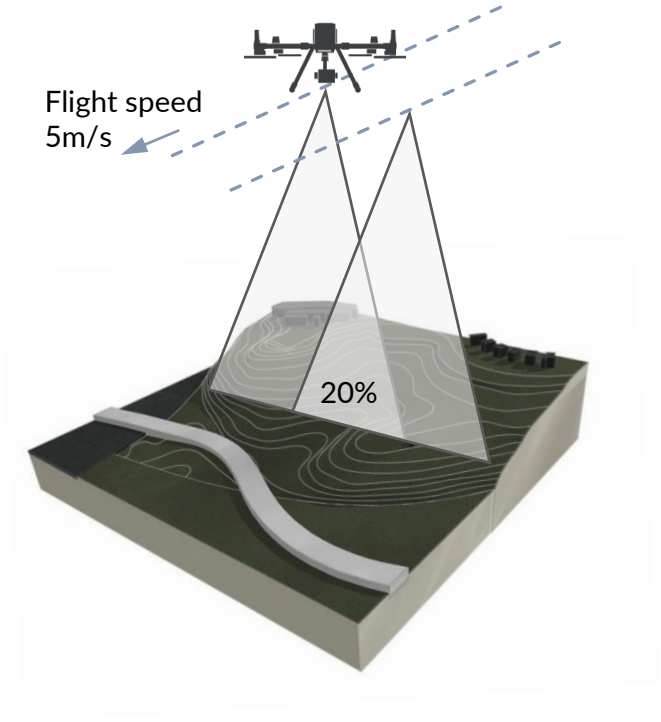
300		120
5m/s	SPEED	5m/s
120m	AGL	80m
415m	SWATH	260m



XFLY - Performances

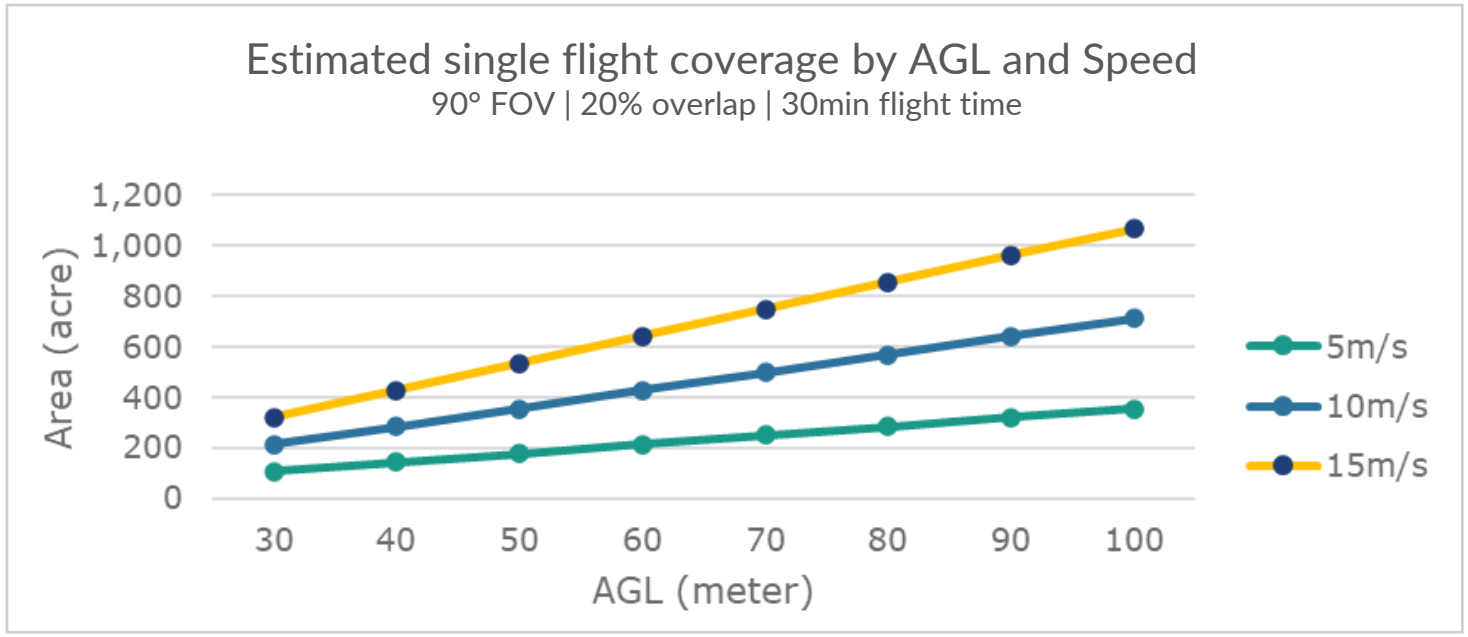


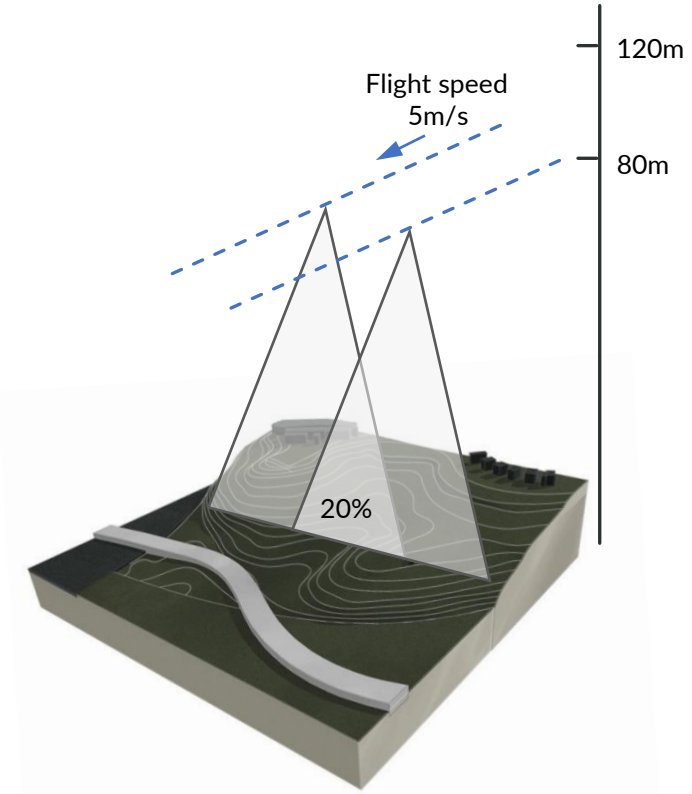


Actual NPD (*Nominal Point Density*) is typically higher depending on flight pattern and overlapping settings.

NPD doesn't consider multi-return factor: the chart is related to both XFLY^{300} and XFLY^{120}.

XFLY - Performances





Actual coverage is typically much smaller (25-50%) depending on effective flight time, flight pattern and overlapping settings.

XFLY - Compatible platforms

Compatible UAVs:

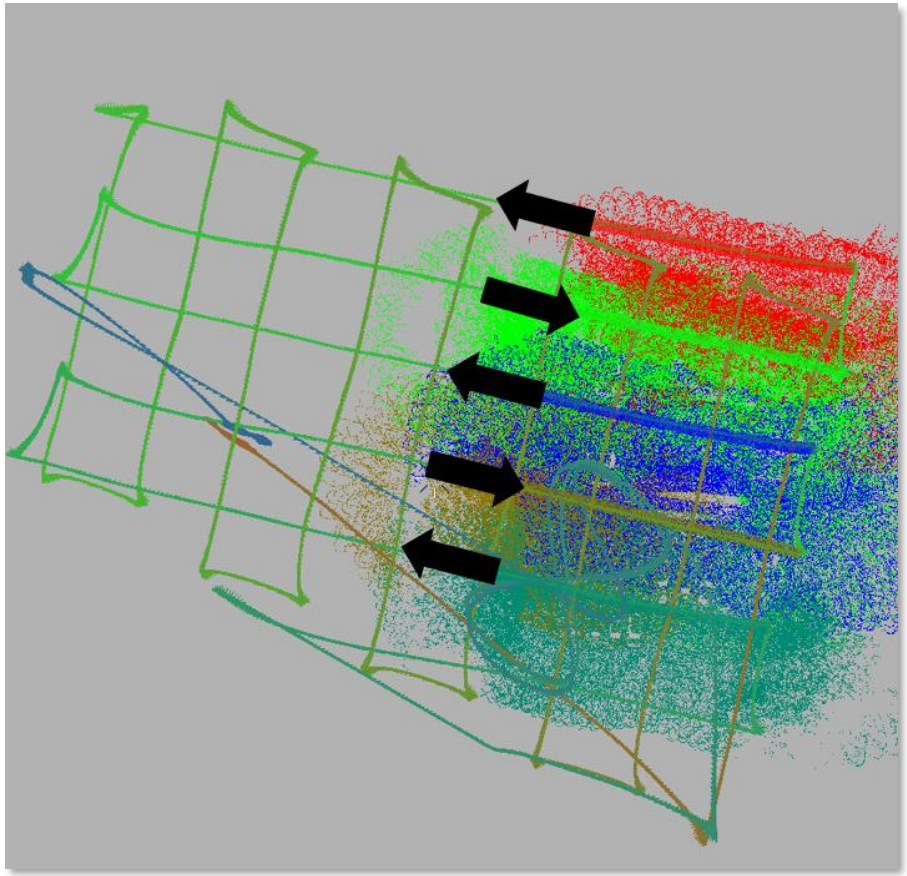
- DJI M210 - M300 - M350 - M600
- Inspired Flight IF1200 Hexacopter
- Freefly Alta X, Freefly Astro
- WISPR Ranger Pro 1100
- Sony Airpeak S1

XFLY - Boresight calibration

A key point of XFLY system is **boresight calibration**.

UAV-based LiDAR solutions are affected by a systematic error due to alignment issue of the LiDAR and the IMU.

Boresight calibration is able to remove that error and correct misalignments between adjacent strips of the point cloud, making XFLY best-in-class performance.

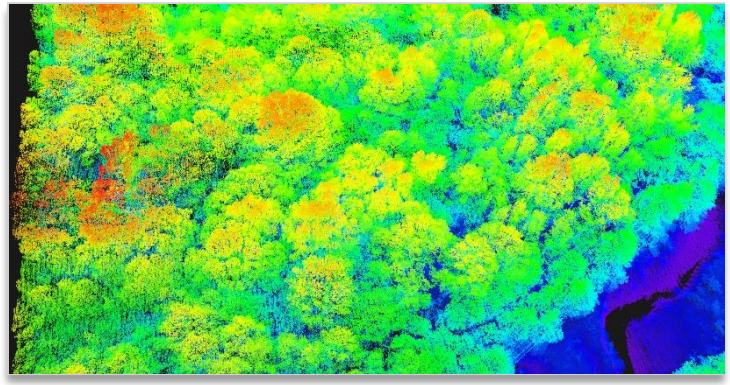


XFLY - Applications

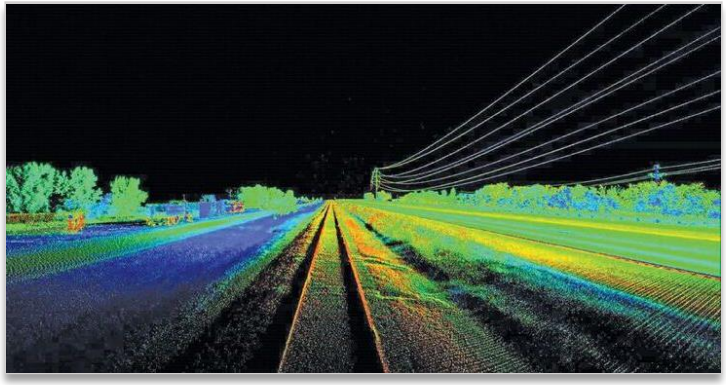
POWERLINE

CONSTRUCTION SITE

FORESTRY



RAILWAY



NATURAL RESURCES MONITORING

Marketing

XFLY - Pictures

XFLY - Brochure

STONEX

XFLY TECHNICAL FEATURES

XFLY300

SYSTEM	
System Vertical Accuracy (5m/s @50m)	±3cm
Recommended AGL	50-100m
Weight	1.23kg (with camera) 0.87kg (no camera)
Dimensions	20.8 x 14.8 x 15.2 cm
Max Flight Time (DJI M300)	35 Minutes
External Storage	256GB USB Included

CAMERA	
Model	ADTI 24MP RGB
Lens	Sony E-Mount 16mm, 70° FOV
Max Trigger Rate	2 seconds

LIDAR	
Sensor*	Hesai XT-32M2X
Range	0.5 - 300m 80m @10% (all channels)
Range Accuracy	±1cm
FOV (Horizontal)	360°
FOV (Vertical)	40.3°
Scan Angle (Vertical)	-20.8° to 19.5°
Beam Divergence	0.21° (H), 0.047° (V) [1]
Channels	32
Returns	3
Pulse Rate	640k/s (single return) 1280k/s (double return) 1920k/s (triple return)

GPS-AIDED INS	
Constellations	GPS, GLONASS, BEIDOU, GALILEO
Output Rates	Up to 200HZ (INS) Up to 2000HZ (IMU)
Pitch/Roll Accuracy	0.03 (RTK) [2] 0.006 (PPK)
Heading Accuracy	0.15 (RTK) [2,3] 0.03 (PPK)
Velocity Accuracy	<0.03 m/s
Position Accuracy	1cm+1ppm (RTK) 0.5cm (PPK)

XFLY120

SYSTEM	
System Vertical Accuracy (5m/s @50m)	±3cm
Recommended AGL	50-100m
Weight	1.7kg (with camera) 1.3kg (no camera)
Dimensions	20.8 x 14.2 x 17 cm
Max Flight Time (DJI M300)	33 Minutes
External Storage	256GB USB Included

CAMERA	
Model	ADTI 24MP RGB
Lens	Sony E-Mount 16mm, 70° FOV
Max Trigger Rate	2 seconds

LIDAR	
Sensor*	Hesai XT-32
Range	0.5 - 120m 80m @10% (c9-24) 50m @10% (c1-8; 25-32)
Range Accuracy	±1cm
FOV (Horizontal)	360°
FOV (Vertical)	31°
Scan Angle (Vertical)	-16° to 15°
Beam Divergence	0.04° (H), 0.098° (V) [1]
Channels	32
Returns	2
Pulse Rate	640k/s (single return) 1280k/s (dual return)

GPS-AIDED INS	
Constellations	GPS, GLONASS, BEIDOU, GALILEO
Output Rates	Up to 200HZ (INS) Up to 2000HZ (IMU)
Pitch/Roll Accuracy	0.03 (RTK) [2] 0.006 (PPK)
Heading Accuracy	0.15 (RTK) [2,3] 0.03 (PPK)
Velocity Accuracy	<0.03 m/s
Position Accuracy	1cm+1ppm (RTK) 0.5cm (PPK)

1. Varies by measurement range
2. Dynamic accuracy is dependent on type of motion
3. With 1-meter baseline

* OTHER SENSORS AVAILABLE: For particular requirements, please contact us to evaluate alternative sensors with different performances.

UNI EN ISO 9001:2015 - XFLY LIDAR - SEPTEMBER 2023 - VER01 - REV-01

Illustrations, descriptions and technical specifications are not binding and may change

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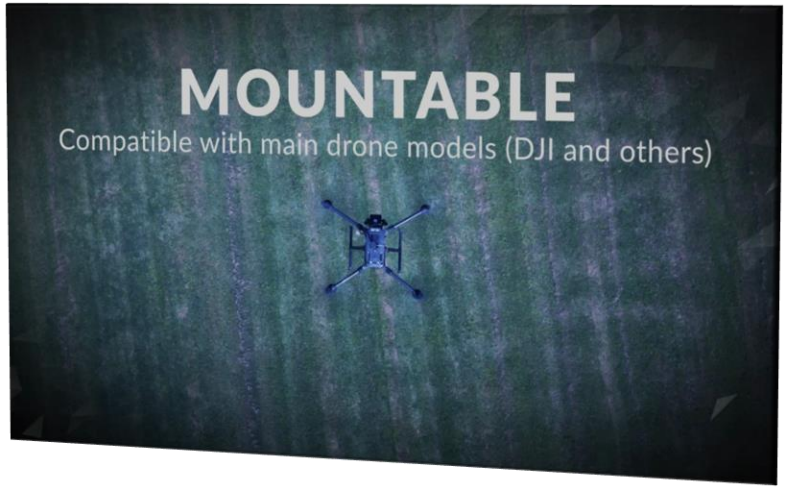
XFLY Lidar Solution

Lidar Solution

LIDAR SOLUTION
XFLY

XFLY - Video

XFLY Video



Configurations

XFLY300 – Standard Configuration

Product code	Description	Q.ty
B60-200427	**XFLY300 Single Antenna - Lidar Solution for DJI M350**	1
60-200427	XFLY300 Single Antenna Lidar Solution	1
	XFLY Carrying case	1
	HC977 Antenna, SMA cable (1m), mounting assemblies	1
	XFLY Cable/connector	1
	XFLY Storage USB drive	1
	XFLY Power cable	1
40-450592	XFLY*post* - Annual license	1
30-350727	DJI M300/350 Vibration isolator	4

LIDAR SOLUTION
XFLY300

XFLY120 – Standard Configuration

Product code	Description	Q.ty
B60-200426	**XFLY120 Single Antenna - Lidar Solution for DJI M350**	1
60-200426	XFLY120 Single Antenna Lidar Solution	1
	XFLY Carrying case	1
	HC977 Antenna, SMA cable (1m), mounting assemblies	1
	XFLY Cable/connector	1
	XFLY Storage USB drive	1
	XFLY Power cable	1
40-450592	XFLY*post* - Annual license	1
30-350727	DJI M300/350 Vibration isolator	4

LIDAR SOLUTION
XFLY120

XFLY – Accessories & Services

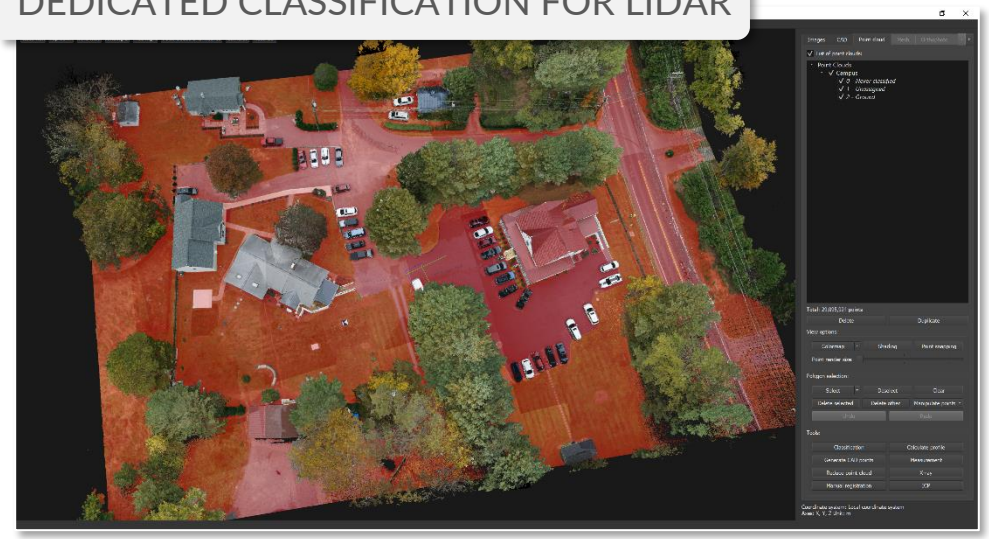
Product code	Description
30-350728	Vibration isolator & mount for DJI M600
30-350726	Base Plate adapter
30-350729	Dovetail adapter
30-350730	Freefly Astro Dovetail adapter
30-350731	Toad in the Hole Adapter

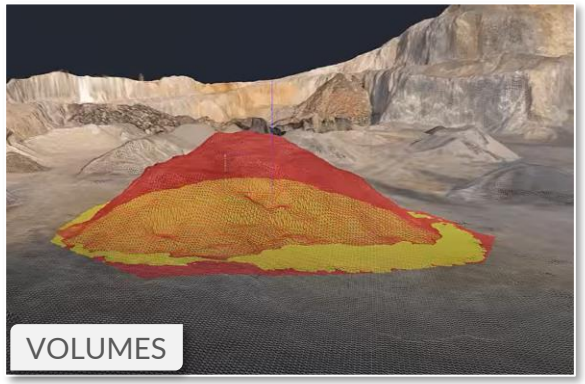
Product code	Description
40-450593	XFLY*post* - Perpetual license
40-450594	XFLY*post* – Perpetual license Annual maintenance

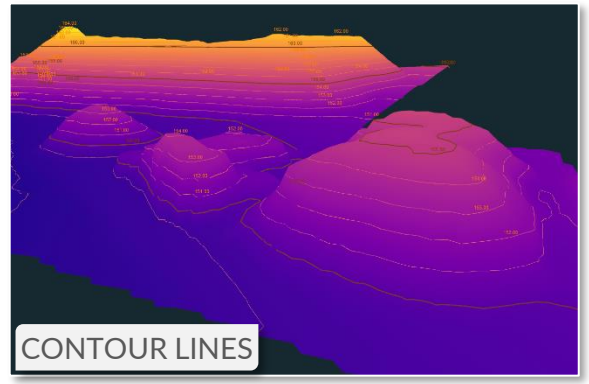
XFLY – Suggested software

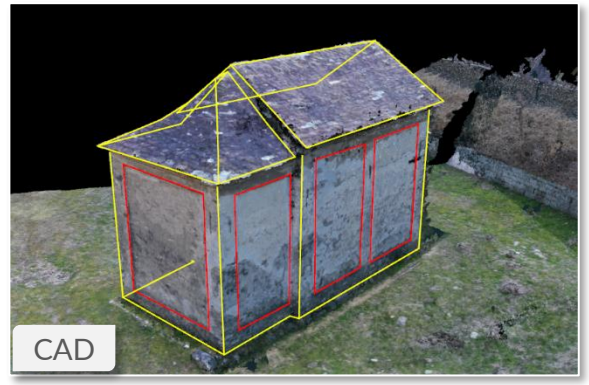
cube·3d

DEDICATED CLASSIFICATION FOR LIDAR









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