Wingtra

Technical specifications
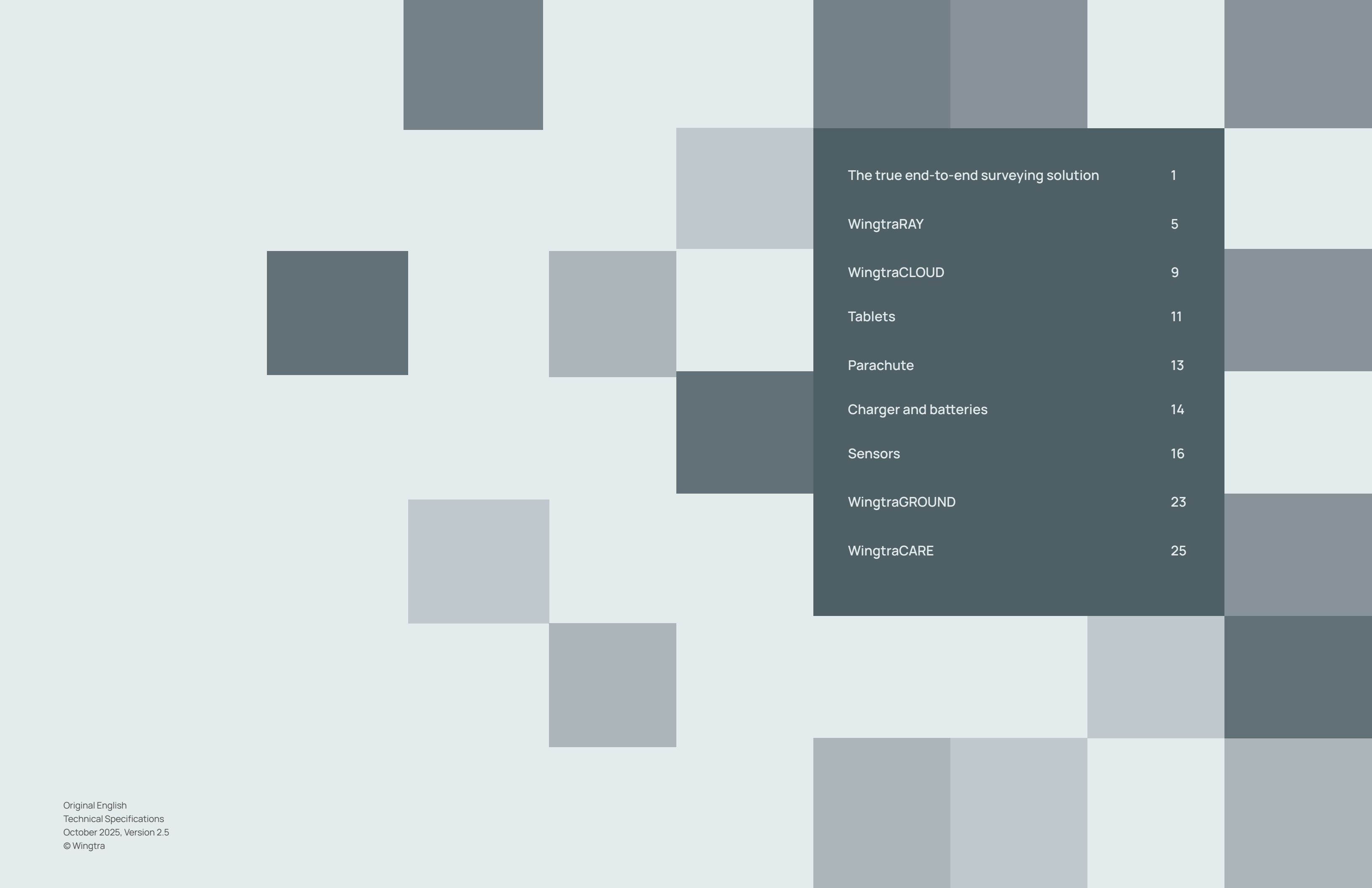
wingtra

Wingtra
The true end-to-end surveying solution

Wingtra gives you a complete drone surveying system. From flight planning to CAD and GIS-ready outputs, it's the only aerial survey solution that keeps it all in one, connected toolchain. It's built for speed, accuracy and ease of use, so you can focus less on setup and more on results that move your projects forward.
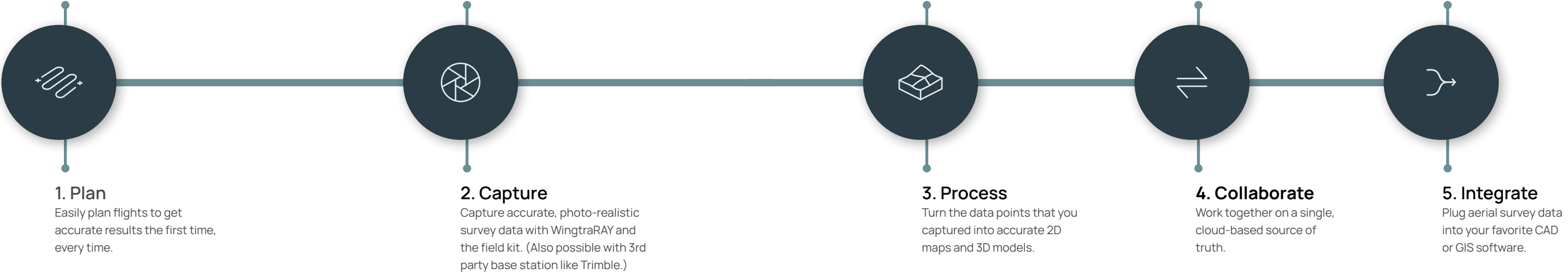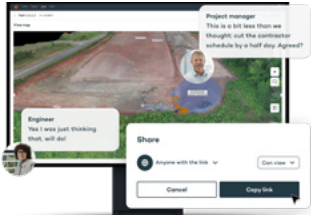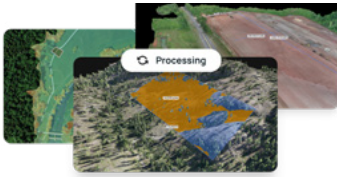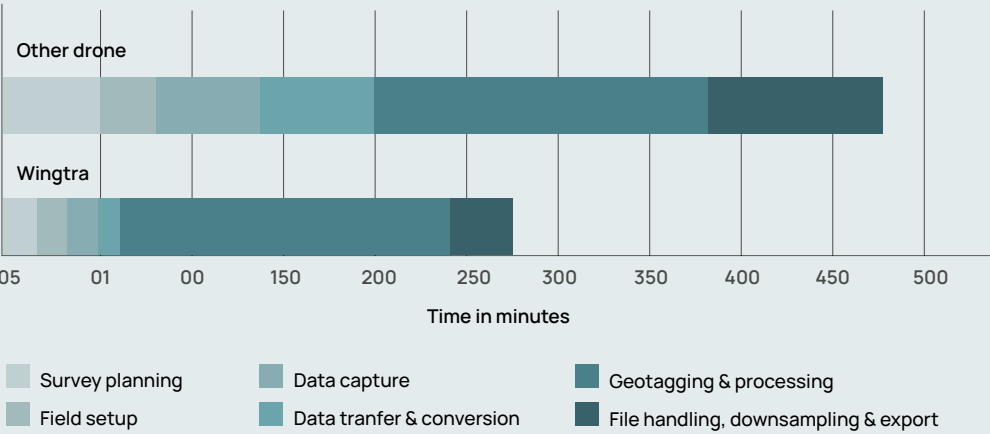
Absolute accuracy

3 cm (0.1 ft)*

(RMS x, y, z) with PPK

* Following our recommended workflow, with WingtraGROUND and WingtraCLOUD, baseline < 10 km, 3 GCPs and verification on independent checkpoints.

Save time at every survey stage

Wingtra offers a perfectly integrated solution that takes you from planning to final deliverables faster and easier—to make you up to 60% more efficient across your entire workflow.

Time in minutes

- Survey planning
- Field setup
- Data capture
- Data tranfer & conversion
- Geotagging & processing
- File handling, downsampling & export

1. Plan
Easily plan flights to get accurate results the first time, every time.

2. Capture
Capture accurate, photo-realistic survey data with WingtraRAY and the field kit. (Also possible with 3rd party base station like Trimble.)

3. Process
Turn the data points that you captured into accurate 2D maps and 3D models.

4. Collaborate
Work together on a single, cloud-based source of truth.

5. Integrate
Plug aerial survey data into your favorite CAD or GIS software.

It just works—
no complex setups, just reliable results

Wingtra combines all devices and software into one seamless flow. Share maps and data with a click. No massive file transfers or external hard drives—just send a link. Clients and teams can view and comment on surveys directly in their browser.
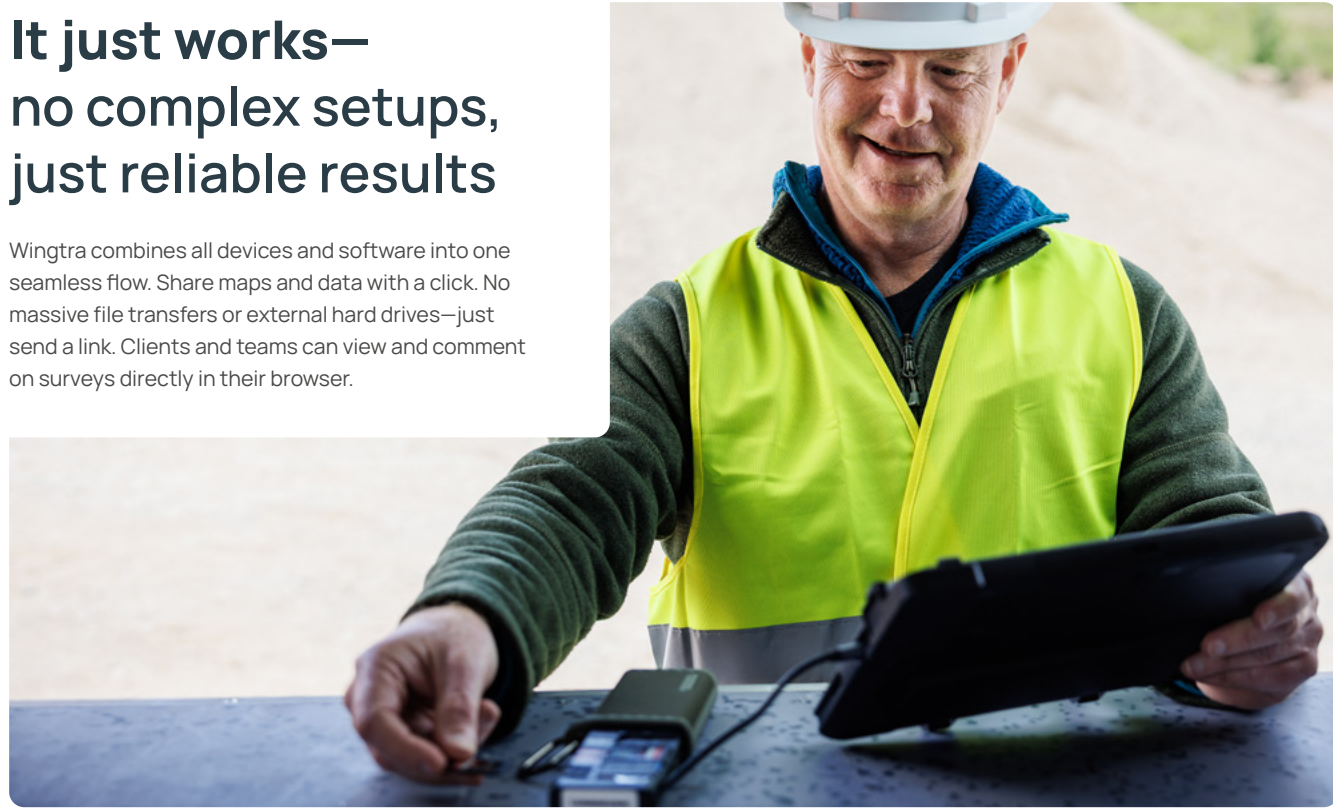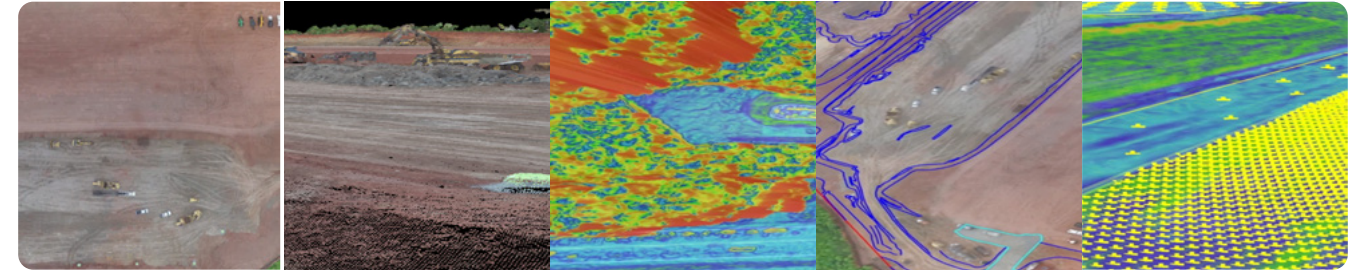

Share and work on accurate, photorealistic survey data—keeping teams and clients aligned

More than just lines and points, photorealistic maps bring the site to life and let stakeholders instantly see what's happening, reducing misunderstandings.

Built to American standards, trusted globally—enabling compliant, reliable and safe drone operations

NDAA COMPLIANT · BLUE UAS · green uas™ · Federal Aviation Administration · EASA European Aviation Safety Agency · C3 CERTIFIED · C6 CERTIFIED · SORA · ENGINEERED IN SWITZERLAND

Accelerate your time to value
Get survey-grade maps across different sites in hours, not weeks

No more costly field revisiting

One survey offers multiple deliverables without making you go back to the site—even if project requirements change.
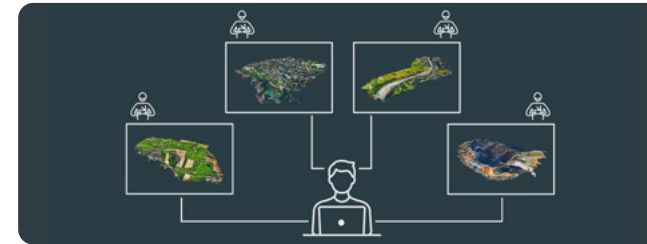
Free up surveyors for high-value tasks

With an intuitve, safeguared system, field teams can easily collect precise data so that surveyors can validate, quality control, and oversee projects.

Cover more ground than other drones

WingtraRAY exceptional capture efficiency reduces the number of flights and relocations, while fast setup gets you back in the air quickly—so you survey more in less time.

550 ha (1360 ac) with a one-hour flight

30x
Faster than terrestrial methods

10x
Faster than multicopter drones

40%
Faster than the previous generation (WingtraOne GEN II)

WINGTRARAY

Hardware

Drone type	Tailsitter vertical take-off and landing (VTOL)
Maximum take-off weight	5.2 kg (11.5 lb)
Payload capacity	1'250 g (2.75 lb)
Wingspan	125 cm (4.1 ft)
Battery capacity	Two 99 Wh batteries (required as a pair)
Battery type	Lithium-polymer, smart battery technology, UN3481 compliant
Radio link (2.4 GHz, primary)	Bi-directional 10 km (6 mi) in direct line of sight, obstacles reduce the range
Radio link (LTE, secondary)	Bi-directional unlimited range within mobile network coverage
Onboard GNSS	Redundant, using GPS (L1, L2), GLONASS (L1, L2), Galileo (L1) and BeiDou (L1) Frequencies range: 1227.6 MHz / 1242.9375-1251.6875 MHz / 1561,098 MHz / 1575,42 MHz / 1598.0625-1609.3125 MHz / 1602,00 MHz
Dimensions of drone	125 × 68 × 12 cm (49.2 × 26.8 × 4.8 in, without landing fin)
Dimensions of transport case	130 x 70 x 34 cm (51.2 x 27.6 x 13.4 in)
Dimensions of transport case with cardboard shipping protection	134 x 74 x 37 cm (52.8 x 29.1 x 14.6 in)
Weight of transport case incl. drone bundle	14.4 kg (32 lb)
Weight of transport case fully loaded (drone bundle + all optional accessories)	18.6 kg (41 lb)

Flying in wind

WingtraRAY can safely fly and capture data in sustained winds up to 12 m/s (27 mph)* and gusts up to 18 m/s (40 mph).

	Max sustained wind	Max wind gusts	Max sustained wind on the ground
	Wind measured by the drone in cruise height over more than 30 seconds	Brief increase in the speed of the wind for less than 30 seconds.	Wind measured on the ground by the wind tool provided in the Wingtra pilot box (average over 30 seconds)
m/s	12 m/s	18 m/s	8 m/s
km/h	43 km/h	65 km/h	29 km/h
mph	27 mph	40 mph	19 mph

⊘ We recommend measuring the wind on the ground. Do not fly if you measure more than 8 m/s (19 mph) over 30 seconds (sustained wind).

⊘ If the wind speed during cruise flight exceeds 12 m/s (27 mph) for more than 30 seconds (sustained wind), WingtraRAY will automatically return home as the data integrity can no longer be guaranteed.

⊘ Flight time may be affected by wind (see detailed section on flight time on the next page).

Tipping expectations

Strong winds and uneven ground can cause the WingtraRAY to tip over. Generally, this is not a problem, since only some scratches might occur and the robustness of the system is not compromised.

Landings in the home point zone are always very accurate and predictable compared to belly landings. In light winds and calm conditions, WingtraRAY lands smoothly on its tail.

Sustained wind measured on ground	Tipping expectations
0-5 m/s (0-11 mph)	Tippings rarely occur
5-8 m/s (11-19 mph)	Tippings can occur
› 8 m/s (› 19 mph)	Not recommended to fly

* As measured with the wind measurement tool from the pilot box continuously over 30 seconds—approximately 2 m (7 ft) above the ground (raise the tool above your head to measure, do not stand close to large objects like buildings or trees since these are conducive to turbulence).

* 12 m/s (27 mph) sustained wind at cruise height (120 m, 400 ft) corresponds to approximately 8 m/s (19 mph) measured on the ground with the wind measurement tool provided in the Wingtra pilot box.

Operation

Flight speed	Operational cruise speed	Adaptive between 16 and 22 m/s (36 and 49 mph)
	Climb / sink cruise	8/8 m/s (17.9 / 17.9 mph)
	Climb / sink hover	6/2.5 m/s (13.4 / 5.6 mph)
Wind resistance	Max sustained wind	12 m/s (27 mph)
	Max wind gusts	18 m/s (40 mph)
	Max sustained wind on the ground	8 m/s (19 mph)
Flight time	59 min with MAP61, SURVEY61, INSPECT, RedEdge-P and SURVEY24	
	45 min with LIDAR	
	See next page or knowledge.wingtra.com/flight-time for what flight time to expect in different flying conditions	
Temperature (ambient)	-10 °C to 40 °C (14 °F to 104 °F)	
Maximum take-off altitude above sea level	4'800 m (15'700 ft) AMSL with high-altitude propellers	
Maximum flight altitude above sea level	5'000 m (16'400 ft) AMSL with high-altitude propellers	
Ingress Protection	IP53	
Weather	Not receoommended to fly in fog, rain and snow	
Auto-landing accuracy	< 2 m (< 7 ft)	

Results

Maximum coverage in one flight at 120 m (400 ft) flight altitude*	MAP61 SURVEY61	550 ha (1360 ac) at 2.7 cm (1.06 in)/px GSD 310 ha (760 ac) at 1.3 cm (0.51 in)/px GSD
Maximum coverage in one flight at lowest GSD*	MAP61 SURVEY61	240 ha (600 ac) at 1.2 cm (0.47 in)/px GSD 120 ha (300 ac) at 0.5 cm (0.2 in)/px GSD
Approximate field time for a 100 ha (250 ac) site at 120 m (400 ft) flight altitude*	MAP61 SURVEY61	15 min at 2.7 cm (1.06 in)/px GSD 30 min at 1.3 cm (0.51 in)/px GSD
Approximate field time for a 1'000 ha (2'500 ac) site at 120 m (400 ft) flight altitude (multiple flights required)*	MAP61 SURVEY61	2 hours at 2.7 cm (1.06 in)/px GSD 4 hours at 1.3 cm (0.51 in)/px GSD
Lowest possible GSD	MAP61 SURVEY61	1.2 cm (0.47 in)/px at 54 m (180 ft) flight altitude 0.5 cm (0.2 in)/px at 46 m (150 ft) flight altitude
Absolute accuracy (RMS x, y, z) with PPK**	3 cm (0.1 ft)	
Relative accuracy (distance measurement) with PPK**	MAP61 SURVEY61	0.005% 0.003%

* Side overlap: 60%.

** Following our recommended workflow, with WingtraGROUND and WingtraCLOUD, plus a baseline of <10 km, 3 GCPs and verification on independent checkpoints.

Flight time, coverage and job time

WingtraRAY's maximum tested flight time is 59 minutes. However, the flight time of any drone is influenced by many factors, so it will not be uniform across different missions. In any case, coverage and job time are determined by many factors, like payload weight and flight speed.

Flight time

Payload
Using a heavier payload reduces flight time. For example, when switching from the MAP61 payload to the heavier LIDAR sensor, the flight time reduces from 59 mn to 45 mn.

Altitude above sea level (ASL)
As the air gets thinner with increasing altitude above sea level, drone flight time is reduced. At the same time, WingtraRAY will fly faster in high altitudes, which means that the coverage is only marginally reduced.*

Transition height
Because the WingtraRAY uses significantly more energy while hovering, the transition altitude affects flight time. A higher transition altitude will result in a reduced flight time.

Wind
In stronger winds, drones consume more energy while flying and landing, which means missions will end up with shorter flight times.

Temperature
As temperature influences air density, it impacts flight time directly. Generally, higher temperatures mean lower flight times.

Payload performance based on altitude ASL

Payload	Take-off altitude ASL	Flight time	Max coverage at 120 m / 400 ft
MAP61	0-500 m 0-1600 ft	59 min	550 ha at GSD 2.7 cm/px 1360 ac at GSD 1.06 in/px
MAP61	2000 m 6600 ft	45 min	470 ha at 2.7 cm/px GSD 1'160 ac at 1.06 in/px
LIDAR	0-500 m 0-1600 ft	45 min	490 ha at 40 pts/m2 1'210 ac at 40 pts/m2
LIDAR	2000 m 6600 ft	30 min	380 ha at 35 pts/m2 940 ac at 40 pts/m2

Reference conditions: one flight, 25 m (80 ft) transition altitude, 1.2 km (0.7 mi) farthest distance from home, < 1 m/s (2.2 mph) wind, 15 °C (59 °F) air temperature, side overlap: 60% for MAP61, 30% for LIDAR, high altitude propellers at 2000 m (6560 ft)

Job time

It's important to note that fast job time does not depend on more flight time like it is often marketed. Because your job time actually depends on how fast you get your data on any specific area. E.g., compared to multicopters, WingtraRAY captures data 11x faster. And compared to most fixed-wings, it's twice as fast. The right drone, payload and settings will get your data faster, and faster means less flight time.

Coverage

What matters more than flight time is coverage, i.e., how much area you can cover in a single flight. Considering this, it is important to choose your payload based on the goal. What do you need? Moreover, how do you balance the precision level and capture speed to get the accuracy you need for the analytics you/your client plans to run? For example, The INSPECT payload offers mm-level detail, while MAP61 maximizes coverage for fewer images and less processing time.

* For example, the MAP61 camera covers 550 ha (1360 acres) in 59 minutes at 0-500 m (0-1640 ft) above sea level, and 470 ha (1,160 acres) in 45 minutes at 2000m (6562 ft) above sea level.

WINGTRA*CLOUD*

WingtraCLOUD is an end-to-end platform that enables you to scale your mapping operations with ease, from start to finish. Empower your team to collaborate effortlessly on survey data from anywhere, and consistently deliver high-quality results to confidently scale mapping operations.

Key benefits

- Tighter collaboration—synchronize and share flight data across teams in real time
- Increased productivity—automate mission planning and efficiently manage survey projects
- Simplified mapping—user-friendly interface for fast, accurate mapping workflows
- Secure and scalable—cloud-based infrastructure for secure storage and easy scalability

	Feature*	Description	
Inputs	Compatible data sources	Aerial imagery (nadir and oblique) from WingtraRAY flight Flight plans from WingtraPilot/WingtraHub Geo-referenced imagery from WingtraHub	
	Supported payloads	RGB: MAP61, RGB61, RXIRII, a6100, Oblique a6100, INSPECT, SURVEY61 Multispectral: RE-P (geotagging only) LIDAR: flight planning only	
	Supported file formats	Images Geospatial data Background layers	.jpg .dxf, .kml, .geojson, .csv Web Map Services (WMS)
Project and Data Management	Project Organization	Store and access all mission files with digital sites	
	Cloud synchronization	Automatic data sync between field and office devices	
	Project sharing & collaboration	Invite unlimited users with different access levels Share flight plans and processed maps instantly via url links	
	Local (on-device) workflow support	Plan, capture, and geotag fully on device—no cloud syncing or data uploads	
Data capture	Automated flights	Automated flights with WingtraRAY (all supported payloads)	
	Flight management	Terrain following, pause and resume, return to home (RTH)	

Flight planning	2D/3D flight planning	Plan missions in complex terrain with elevation-based flight paths Use offline maps for flight planning	
	Custom background maps and elevation data	Import site-specific elevation models for accurate flight planning	
	Viewshed analysis	Simulate line-of-sight coverage to assess visibility	
	Obstacle awareness	3D buildings overlay to detect potential obstructions	
	Large-Area mission planning	Optimize multi-flight projects to ensure overlap and avoid gaps	
Processing, Outputs and Export Options	Processing options	PPK single point processing (WingtraGROUND) PPK image geotagging (multi-constellation) Map processing, including check-points or ground control points Batch geotagging and maps processing	
	Output coordinate system selection	Process projects in published and local coordinate systems of choice to guarantee optimal workflows	
	2D Outputs	Orthomosaics	.tif
	3D Outputs	Point clouds 3D mesh models	.laz .obj
	2.5D Outputs	Digital surface models (DSM)	.tif
	Flight records	Flight logs Base files (rinex) Checkpoints Raw images	.ulg .o,.b,.p .csv .jpg
	Reports and documentation	Quality report	.pdf
Measurement and Analysis Tools	Annotations and measurements	Accurately measure points, slopes, distances and areas in project datasets	
Workflow Integration	WingtraGROUND and WingtraCLOUD Sync	Automatic detection and in-field workflow for integrated GNSS receiver (WingtraGround) Automatic sync of GNSS data (base correction, checkpoints) to WingtraCLOUD for fast post-processing and accuracy verification	
	Pilot assignment and Team management	Assign pilots to specific missions remotely Assign drones to specific missions remotely	
Third-Party Integrations	GIS & CAD compatibility	Export cropped and downsampled project data to external platforms (e.g. ArcGIS, AutoCAD) for further analysis	
	Web map services (WMS)	Overlay real-time GIS layers for enhanced mission planning	
	Upload and share third-party maps	Upload, view and share processed 2D and 3D outputs from sources other than Wingtra acquired data	
Support and Availability	Support options	Wingtra email support for license holders Wingtra knowledge base Wingtra community feedback portal	
Languages	Available languages	English	

*Available features depend on the chosen software subscription (see all plans: https://wingtra.com/wingtracloud/).

Tablets

Unmatched performance for your Wingtra surveying operations. Your Wingtra drone comes with a rugged tablet to handle your planning operations.

For professionals conducting full-day field operations in harsh and challenging environments, the Premium Tablet is designed to transform how you operate in the field, offering all-day power, extreme visibility and seamless connectivity. Built for the harshest conditions, it ensures uninterrupted, efficient, and confident operations from take-off to data delivery.
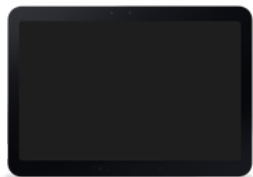
Samsung Tab Active 5 Pro
(supplied)

Premium Tablet
(available as add-on)

	Samsung Tab Active 5 Pro	Premium Tablet
Display size	10.1 "	10.1 "
Brightness	600-nit display for clear visibility in bright sunlight	1000-nit display for clear visibility in bright sunlight
Battery life	10'100 mAh	17,840 mAh, with hot-swappable batteries for all-day use
Temperature range	0 °C to 50 °C (32 °F to 122 °F)	-30 °C to 55 °C (-22 °F to 131 °F)
Wireless connectivity	Wi-Fi and Bluetooth	5G and Wi-Fi 6E for faster, reliable communication
Performance	SnapDragon 7S-Gen3 octa-core 2.5 GHz	Qualcomm® 6490 octa-core 2.7 GHz platform for smooth operation
User environment	IP68 dust tight and water resistant, MIL-STD-810 certified	IP66 dust tight and water resistant, MIL-STD-810H

Data link (primary)

Module name	WingtraRAY Telemetry 2.4
Main function	Telemetry connection for remote operation
Frequency range telemetry	2.4016-2.4776 GHz
Occupied bandwidth	6.0 MHz
Operation mode	FHSS (Frequency Hopping Spread Spectrum)
Typical datarate	57.6 kb/s
Transmission power (EIRP)	19,8 dBm
Tested maximum range	10 km (6 mi) in direct line of sight, keep in mind that obstacles reduce the range
Number of channels	76
Channel bandwidth	100 kHz
Method of modulation	GFSK

Data link (secondary)

Module name	WingtraRAY Telemetry LTE	
Main function	Telemetry connection fallback and for beyond-visual-line-of-sight (BVLOS) operations	
Frequency range telemetry	LTE FDD bands	1, 2, 3, 4, 5, 7, 8, 12, 13, 18, 19, 20, 26, 28
	LTE TDD bands	38, 39, 40, 41
	UMTS / HSPA FDD	1, 2, 5, 8
	GMS / GPRS / EGPRS bands	Quad
SIM card	Global roaming*	

ⓘ In case of many obstacles blocking visual line of sight or BVLOS missions, you can increase the connection loss timeout parameter on WingtraCLOUD. It defines the maximum time a connection loss of telemetry is tolerated until a mission is aborted. In this case, missions will run uninterrupted even if there is no telemetry connection.

*some countries excluded, see https://knowledge.wingtra.com

Parachute

A parachute built for legal, safe flights

WingtraRAY's parachute deploys automatically, or you can trigger it manually. It's built to protect people below and help you avoid waivers, delays and legal risks.

Parachute

Module name	WingtraRAY parachute add-on
Manual activation	Through fully redundant and segregated ground station and activation circuit on the drone
Automatic activation	Based on loss of control, navigation or drone health
Maximum sink rate	4.5 m/s (10 mph)*
Minimum deployment altitude	30 m (98 ft)

Parachute manual trigger device

Module name	WingtraRAY manual trigger device	
Main function	Manual triggering of parachute deployment	
Tested maximum range	4 km	
Operating frequencies	Profile 1	902 - 915 MHz USA
	Profile 2	863 - 870 MHz Europe
	Profile 3	915 - 928 MHz AUS, BRA
	Profile 4	921 - 928 MHz JP

Charger and batteries

When navigating short weather windows and tight schedules is crucial, you can rely on fast charging, long-lasting batteries to help you conquer more ground in one go.

Battery charger

Module name	WingtraRAY Charger
Charger type	4 channel dock, external DC supply
Input voltage AC	110-240 V, 50-60 Hz
Input power AC	200 W
Input voltage DC	11 - 36 V (optional, e.g., for charging from car)
Input power DC	24-36 V : 200 W 12 V : 50 W
Modes	Charge / storage
Charging profile	Standard lithium-ion CC-CV
Charging time	1 h per pair
Storage discharge time	Max. 5 hours per pair.
Charge end voltage	35.2 V (4.4 V per cell)
Maximum discharge power	20 W
Storage end voltage	30.8 V (30% SOC)
Addtional outputs	2 x USB-C 5 V
Dimensions	190 × 150 × 40 mm (7.5 × 5.5 × 2.75 in)
Weight	680 g

*Depending on your drone configuration and environmental conditions, sink speed and wind limit for operations over people vary.
Use our OOP calculator on https://knowledge.wingtra.com

Battery

Module name	WingtraRAY Battery
Model number	WRB01
Battery capacity	99 Wh (a pair of batteries required)
Features	Redundant design, high energy density, smart fuel gauging, latch detector, LED charge indicator, UN3481 compliant for air-travel
Nominal voltage	30.8 V
Cell type	Lithium polymer
Configuration	8 s
Rated charge	3.3 A
Charging time	1 h
Battery dimension	108 × 69 × 55 mm (4.3 × 2.7 × 2.2 in)
Battery weight	525 g (1.2 lb)
Battery cell operating temperature (take-off)	10 °C to 45 °C (50 °F to 113 °F) Takeoff will be prevented outside of this range
Battery cell operating temperature (in-flight)	10 °C to 60 °C (50 °F to 140 °F) The drone will automatically return to home in case the maximum battery temperature is exceeded during flight
Battery storage temperature (optimal capacity recovery)	10 °C to 25 °C (50 to 77 °F)
Battery storage temperature (safe storage up to 3 months)	-20 °C to 45 °C (-4 °F to 113 °F)
Shock protection	Yes
Overvoltage protection	Yes
Undervoltage protection	Yes
Temperature protection	Yes
Short circuit protection	Yes
Material safety data sheet (MSDS)	Available on request

Sensors

Serve more customers and applications with Wingtra's extensive line of sensors. From fine, mm-resolution airport crack detection, to LIDAR terrain models, for mine planning, to 3D city maps—you can do it all on the Wingtra platform.

Full mapping flexibility

Modular payloads	Yes, with toolless payload swap (twist-lock)	
Power supply	Powered by WingtraRAY (up to 80 W)	
Payload protection	Yes, maintenance-free integration with full enclosure in main drone body, shock-protection, and smooth VTOL landings	
Mapping sensors	MAP61	Most efficient mapping solution & best 3D results
	SURVEY61	Highest quality photogrammetry with survey-grade accuracy
	INSPECT	Milimeter-resolution inspections
	SURVEY24	The affordable mapping & surveying solution
	RedEdge-P	Multispectral insights
	LIDAR	Topographic mapping beneath vegetation
Additional payloads	Parachute add-on for operations over populated areas	
PPK equipped	All drones are equipped with a high-precision GNSS board and antenna to produce centimeter-level accuracy with post-processed kinematic (PPK)	

RGB sensors

	MAP61	SURVEY61	INSPECT	SURVEY24
	Most efficient and best 3D capabilities	Highest quality photogrammetry with survey-grade accuracy	Milimeter-resolution inspections	The affordable mapping and surveying solution
Technical specifications	61 MP, full-frame sensor, wide-angle lens (17 mm), low oblique configuration	61 MP, full-frame sensor, low-distortion lens (35 mm), nadir configuration	61 MP, full-frame sensor, tele lens (85 mm), nadir configuration	24 MP, APS-C sensor, low-distortion lens (20 mm), nadir configuration
Payload weight (incl. mount)	650 g (1.43 lb)	585 g (1.29 lb)	780 g (1,29 lb)	550 g (0.73 lb)
GSD at 120 m (400 ft)	2.7 cm/px (1.06 in/px)	1.3 cm/px (0.51 in/px)	0.5 cm/px (0.2 in/px)	2.4 cm/px (0.9 in/px)
Lowest possible GSD	1.2 cm/px (0.47 in/px) at 54 m (180 ft)	0.5 cm/px (0.2 in/px) at 46 m (150 ft)	0.25 cm/px (0.1 in/px) at 57 m (190 ft)	1.2 cm/px (0.47 in/px) at 61 m (200 ft)
Max coverage at 120 m (400 ft)	550 ha (1360 ac)	310 ha (770 ac)	80 ha (200 ac)	330 ha (820 ac)
Max coverage at lowest GSD*	240 ha (600 ac)	120 ha (300 ac)	35 ha (100 ac)***	170 ha (420 ac)
Absolute accuracy (RMS x, y, z) with PPK**	3 cm (0.1 ft)	3 cm (0.1 ft)	3 cm (0.1 ft)	3 cm (0.1 ft)
Sensor type	Full frame	Full frame	Full frame	APS-C
Sensor size x	35.7 mm (1.4 in)	35.7 mm (1.4 in)	35.7 mm (1.4 in)	23.5 mm (0.93 in)
Sensor size y	23.9 mm (0.93 in)	23.9 mm (0.93 in)	23.9 mm (0.93 in)	15.6 mm (0.61 in)
Mega pixel	61	61	61	24.2
Shutter type	Mechanical, focal plane	Mechanical, focal plane	Mechanical, focal plane	Mechanical, focal plane
Pixel in x	9504	9504	9504	6000
Pixel in y	6336	6336	6336	4000
Focal length of lens	17 mm (0.67 in)	35 mm (1.38 in)	85 mm (3.35 in)	20 mm (0.79 in)
Focal length (35mm equivalent)	17 mm (0.67 in)	35 mm (1.38 in)	85 mm (3.35 in)	29.8 mm (1.17 in)
Front tilt angle (off-nadir)	15 °	0 °	0 °	0 °
Vertical field of view	70 ° (-20 ° ... 50 °)	42 °	24 °	43 °
Horizontal field of view	93 ° (-47 ° ... 47 °)	60 °	16 °	61 °
Minimal trigger time	0.4 s	0.4 s	0.4 s	1.0 s

* side overlap of 60%
**Achievable when following Wingtra's recommended workflow: flying Wingtra drones with built-in GNSS PPK, using WingtraGROUND or a survey-grade base station within 10 km, and processing in WingtraCLOUD. Accuracy refers to independent checkpoints—based on three established GCPs—in processing.
***Optimised for runway inspection and similarly flat inspection use cases.

GSD overview RGB sensors

	MAP61	SURVEY61	INSPECT	SURVEY24
	Most efficient and best 3D capabilities	Highest quality photogrammetry with survey-grade accuracy	Milimeter-resolution inspections	The affordable mapping and surveying solution
GSD at 120 m (400 ft) flight altitude	2.7 cm/px (1.06 in/px)	1.3 cm/px (0.51 in/px)	0.5 cm/px (0.2 in/px)	2.4 cm/px (0.9 in/px)
Flight altitude	120 m (400 ft)	120 m (400 ft)	120 m (400 ft)	120 m (400 ft)
Max frontal overlap	95%	90%	81%	83%
Max coverage*	550 ha (1360 ac)	310 ha (770 ac)	80 ha (200 ac)	330 ha (820 ac)
Lowest possible GSD	1.2 cm/px (0.47 in/px)	0.5 cm/px (0.2 in/px)	0.25 cm/px (0.1 in/px)	1.2 cm/px (0.47 in/px)
Flight altitude	54 m (180 ft)	46 m (150 ft)	57 m (190 ft)	61 m (200 ft)
Max frontal overlap	90%	81%	62%	67%
Max coverage*	240 ha (600 ac)	120 ha (300 ac)	40 ha (100 ac)	120 ha (300 ac)
2.0 cm/px GSD	2 cm/px (0.79 in/px)	2 cm/px (0.79 in/px)	2 cm/px (0.79 in/px)	2 cm/px (0.79 in/px)
Flight altitude	92 m (300 ft)	184 m (600 ft)	460 m (1510 ft)	102 m (330 ft)
Max frontal overlap	96%	96%	96%	87%
Max coverage*	410 ha (1010 ac)	350 ha (860 ac)	300 ha (740 ac)	205 ha (500 ac)
GSD at 600 m (1970 ft) flight altitude	13.2 cm/px (3.7 in/px)	6.5 cm/px (2.56 in/px)	2.6 cm/px (1.0 in/px)	12 cm/px (4.7 in/px)
Flight altitude	600 m (1970 ft)	600 m (1970 ft)	600 m (1970 ft)	600 m (1970 ft)
Max frontal overlap	99%	99%	95%	95%
Max coverage*	2280 ha (5630 ac)	1550 ha (3830 ac)	350 ha (860 ac)	1100 ha (2700 ac)

* side overlap of 60%

LIDAR system

LIDAR system
Easy-to-use, precise and efficient

Payload weight (incl. mount)	1060 g
Point density at 45 m AGL (single pass, single return)	110 pt/m²
Effective point density of deliverable at 45 m AGL with 50% side overlap	Hard surface: ~220 pts/m² (single return) Low vegetation: up to 440 pts/m² (dual return) High vegetation: up to 660 pts/m² (triple return)
Effective point density of deliverable at 90 m AGL with 50% side overlap	Hard surface: ~110 pts/m² (single return) Low vegetation: up to 220 pts/m² (dual return) High vegetation: up to 330 pts/m² (triple return)
Effective point density of deliverable at 120 m AGL with 50% side overlap	Hard surface: ~84 pts/m² (single return) Low vegetation: up to 168 pts/m² (dual return) High vegetation: up to 252 pts/m² (triple return)

With PRS (Parachute Recovery System)	Max coverage for highest density at 45 m (150 ft)	Up to 220 ha (545 ac) (30% side overlap)
	Max coverage at 90 m (300 ft)	Up to 415 ha (1025 ac) (30% side overlap)
Without PRS (Parachute Recovery System)	Max coverage for highest density at 45 m (150 ft)	Up to 245 ha (605 ac) (30% side overlap)
	Max coverage at 90 m (300 ft)	Up to 460 ha (1,140 ac) (30% side overlap)
Vertical absolute accuracy at 90 m (RMS)	3 cm (0.1 ft)	

Scanner

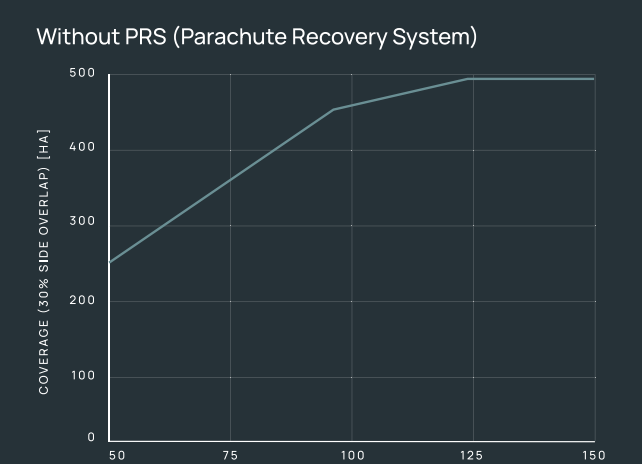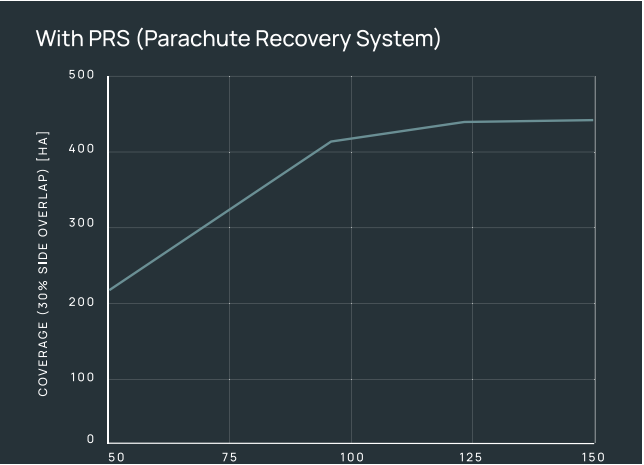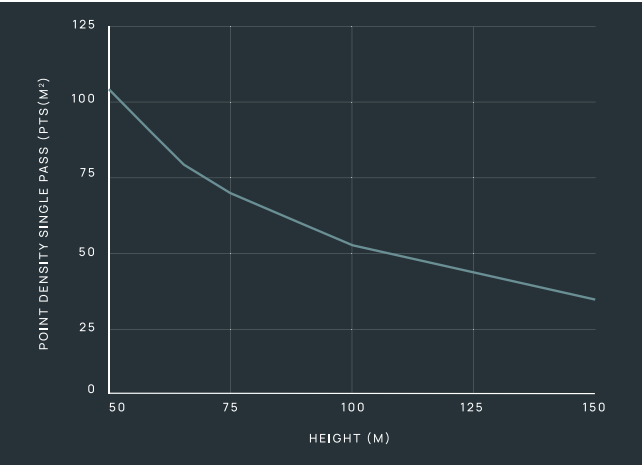|	
Laser scanner	Hesai XT32M2X
Field of view (horizontal)	90 °
Field of view (vertical)	40.3 °
Number of returns	3
Sensor type	Rotating sensor
Wavelength	905 nm
Range	0.5 - 300 m 80 m with 10% reflectivity (all channels)
Pulse	640 k/s (single return) 1280 k/s (double return) 1920 k/s (triple return)

Imu

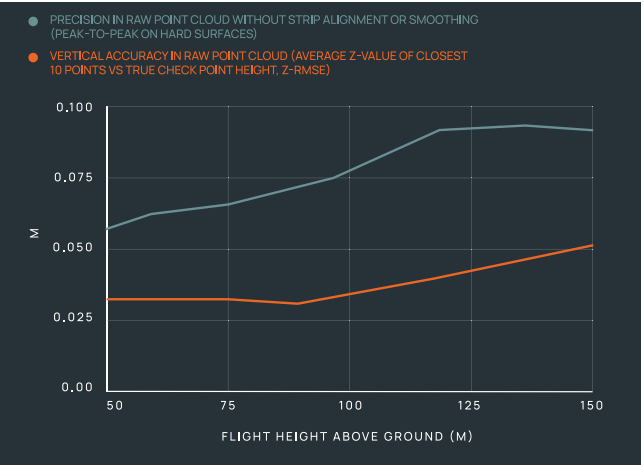|	
Inertial measurement unit	Inertial Labs Tactical-Grade IMU-P
Pitch/roll accuracy	0.006 °
Heading accuracy	0.03 °

GNSS

GNSS system	NovAtel OEM7500
Constellations	GPS, GLONASS, BEIDOU, GALILEO
Position accuracy	0.5 cm
PPK	Yes

Software

Processing SW	Wingtra LIDAR app
Point cloud generation	LAS and LAZ
Trajectory correction	Yes

PRECISION IN RAW POINT CLOUD WITHOUT STRIP ALIGNMENT OR SMOOTHING (PEAK-TO-PEAK ON HARD SURFACES)

VERTICAL ACCURACY IN RAW POINT CLOUD (AVERAGE Z-VALUE OF CLOSEST 10 POINTS VS TRUE CHECK POINT HEIGHT, Z-RMSE)

With PRS (Parachute Recovery System)

Without PRS (Parachute Recovery System)

Multispectral sensor

RedEdge-P
Multispectral insights

Technical specifications	5 multispectral sensors (R, G, B, RE, NIR, 5.5 mm lenses) + panchromatic band, 10.3 mm lens, nadir configuration	
Payload weight (incl. mount)	456 g (1.00 lb)	
Ground sampling distance (GSD) at 120 m (400 ft)	4.0 cm/px (1.57 in/px)	
Lowest possible GSD	2.0 cm/px 0.78 in/px at 60 m (200 ft)	
Maximum coverage at 120 m (400 ft)*	Up to 180 ha (440 ac)	
Maximum coverage at lowest GSD*	Up to 90 ha (230 ac)	
Absolute accuracy (RMS x, y, z) with PPK**	3 cm (0.1 ft)	
Sensor type	5 individual sensors Red, Green, Blue, Rededge, Near-infrared	Panchromatic sensor
Sensor size x	5.04 mm (0.19 in)	8.5 mm (0.33 in)
Sensor size y	3.78 mm (0.15 in)	7.1 mm (0.28 in)
Mega pixel	5 × 1.58	5.1
Shutter type	Electronic shutter	Electronic shutter
Pixel in x	1456	2464
Pixel in y	1088	2056
Focal length of lens	5.5 mm (0.22 in)	10.3 mm (0.4 in)
Focal length (35mm equivalent)	41 mm (1.61 in)	38,6 mm (1.52 in)
Vertical field of view	38.3 °	37.7 °
Horizontal field of view	49.6 °	44.5 °
Minimal trigger time	0.5 s	0.5 s
Minimal trigger distance	8 m (26 ft)	8 m (26 ft)

* side overlap of 70%
**Achievable when following Wingtra's recommended workflow: flying Wingtra drones with built-in GNSS PPK, using WingtraGROUND or a survey-grade base station within 10 km, and processing in WingtraCLOUD. Accuracy refers to independent checkpoints—based on three established GCPs—in processing.

GSD overview of multispectral sensor

RedEdge-P
Multispectral insights

| GSD at 120 m (400 ft) flight altitude	4 cm/px (1.6 in/px)
Flight altitude	120 m (400 ft)
Maximum frontal overlap	80%
Maximum coverage*	180 ha (440 ac)
Lowest possible GSD	2 cm/px (0.78 in/px)
Flight altitude	60 m (195 ft)
Maximum frontal overlap	75%
Maximum coverage*	80 ha (200 ac)
6.0 cm/px GSD	6 cm/px (2.4 in/px)
Flight altitude	180 m (590 ft)
Maximum frontal overlap	81%
Maximum coverage*	240 ha (400 ac)
GSD at 600 m (1970 feet) flight altitude	20 cm/px (8 in/px)
Flight altitude	600 m (1970 ft)
Maximum frontal overlap	95%
Maximum coverage*	600 ha (1480 ft)

* side overlap 70%

WINGTRA*GROUND*

What's in the kit
Everything you need for surveying—GNSS receivers, tripods, checkpoints, nails, and a hammer—in a single, portable hard case.
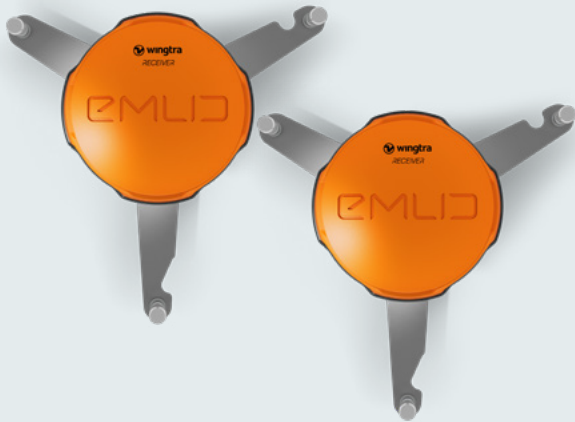
2x GNSS receivers with 2x tripods
One used as a stationary (base) and one used to collect data from checkpoints (rover). Two Tripods with fixed dimensions and height, eliminating antenna offset user error.
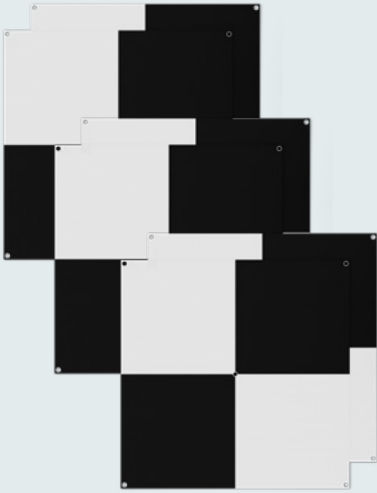
6x flexible targets
Ground control points and/or checkpoints to verify your accuracy.

Nails and hammer
Industry-grade to fix your targets on the ground and/or mark new sites and known points.

Base logging

Relative positioning	Setup on known point
Absolute positioning	PPP coming soon
Base logging	Max 22 h

Checkpoint logging

Duration	30 s
Max distance to base	Up to 10 km for best accuracy

WingtraCloud integration

Accuracy	3 cm*
Communication	Bluetooth or WiFI
Processing options	PPK single point processing PPK image geotagging Map processing including checkpoints or ground control points

WingtraRECEIVER

Type	Emlid Reach RS3
Positioning accuracy PPK	H: 5 mm +0.5 ppm V: 10 mm+1 ppm
Signal tracked	GPS/QZSS L1C/A, L2C, GLONASS L1OF, L2OF, BeiDou B1I, B2I Galileo E1B/C, E5b
Number of channels	184
Weight	950 g
Size	126 x 126 x 142 mm
Waterproof	Up to one meter depth (IP67)
Temperature range	-20 °C to +65 °C
Batteries	Li-Ion
Battery lifetime	Over 2000 cycles of charging and discharging
Internal storage	16 GB

* Under specific conditions: < 1 cm GSD, <10 km baseline, well-textured land cover, good weather conditions, known point with survey-grade accuracy available.

WINGTRA*CARE*

Comprehensive coverage for your Wingtra drone

Fly with peace of mind and enjoy maximum uptime with an extended service plan that keeps costs predictable, and projects on track and on time. Whether you're surveying construction sites, vast wetlands, or property boundaries, WingtraCARE ensures your Wingtra drone is always operational.

Fly without fear

Fly confidently from day one thanks to our online training and premium support. And just in case, you're covered in case of an accidental crash or hard landing due to user error. You'll be back in the air quickly without hidden fees.

Simple and predictable budget

A simplified, upfront cost structure helps you avoid budget surprises and administrative hassle. With no deductibles or hidden charges, you'll always know what you're paying and when.

Maximum uptime

Enjoy priority repairs, express shipping options, and advanced replacements that ensure uninterrupted operations.

Peace of mind and reliability

In case you need repairs or maintenance, all work is performed by Wingtra certified technicians using original parts. So you can trust the team who will apply the most expertise and care possible to your system.

What's included

Hardware replacement

Replace your drone, sensor (including LIDAR) and accessories in case of product malfunctions or accidents caused by user error.

Wear and tear coverage

Replace your consumable parts like propellers and batteries that have worn down due to normal use.

Premium support

Access our priority support queue for dedicated help from our solutions engineering team.

Free advanced training

Get basic and advanced online training for up to five pilots to operate the drone confidently and safely.

For a quote, a live demonstration or more information on Wingtra products please contact us via wingtra.com or sales@wingtra.com.

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