WingtraOne
Technical Specifications

wingtra.com

wingtra

The all-in-one drone: large coverage, high resolution and accuracy

WingtraOne

Resolution	down to 0.7 cm/px (0.3 in/px) GSD
Accuracy	down to 1 cm (0.4 in) absolute accuracy
Coverage	400 ha at 3 cm/px (988 ac at 1.2 in/ px) GSD

WingtraOne drone offers broad coverage, brilliant resolution and ultra-high accuracy in one mapping device.

With such unprecedented functionality, WingtraOne can map a quarry the size of 240 American football fields in an hour's flight. The resolution of the final map allows to zoom in and see tiny details such as a coin lying on the ground. And what is best – it is possible to know the exact coordinates of the coin down to an absolute accuracy of 1 cm (0.4 in).

Hardware

Drone type	Tailsitter VTOL (Vertical take-off and landing)
Max. take-off weight	4.5 kg (9.9 lb)
Weight (empty)	3.7 kg (8.1 lb)
Max. payload weight	800 g (1.8 lb)
Wingspan	125 cm (4.1 ft)
Dimensions of WingtraOne	125 × 68 × 12 cm (without middlestand)
Dimensions of Pilot Box	57 × 37 × 20 cm, 8.6 kg (19 lb)
Battery capacity	99 Wh (a pair of batteries required)
Battery type	Li-ion, Smart battery technology, UN compliant
Radio link	8 km (5 mi), bi-directional antennas for optimal range
Onboard GPS	Double redundancy, using GPS, Glonass and ready for Galileo and Beidou
Dimensions of Travel Hardcase (optional)	143 × 80 × 20 cm, 16 kg (35 lb)

Software & Tablet

Flight planning & mission control Software	WingtraPilot
Tablet (supplied)	Android tablet; pre-installed; ready-to-fly. Interfaces to Telemetry module (data link for automated drone control) and manual back-up controller
Updates	free

Operation

Operational cruise speed	16 m/s (35.8 mph)
Climb speed cruise	6.0 m/s (13.4 mph)
Wind resistance	Up to 45 km/h (12 m/s, 28 mph) in cruise, up to 30 km/h (8 m/s, 18 mph) for landing
Maximum flight time	55 minutes
Min. space for take-off and landing	2 m × 2 m (6.6 ft × 6.6 ft)
Designed Temperature Range *	-20° to 50° C (-4° F to 122° F)
Max. altitude (a.m.s.l.)	3000 m (9800 ft)
Weather	No precipitation, resists light rain
Ground Control Points required	No (with PPK option)
Descent speed cruise	4.0 m/s (8.9 mph)
Climb speed hover	6.0 m/s (13.4 mph)
Descent speed hover	1.0 m/s (2.2 mph)
Auto-Landing accuracy	< 5 m (< 16 ft)

Results

Coverage at 120m (400ft) **	320 Ha (790 ac)
Max. coverage ***	45 km² (17 mi²)
Minimal ground sampling distance ****	Down to 0.7 cm / pixel (0.3 inch/pixel)
Mapping accuracy with PPK (w/o GCPs)	Absolute accuracy (RMS): Horizontal: down to 1 cm (0.4 in); vertical: down to 2 cm (0.8 in) Relative accuracy: down to 0.003 % (horizontal)
Mapping accuracy w/o PPK (w/o GCPs)	Absolute accuracy (RMS): 3–5 m (9.8–16.4 ft) Relative accuracy: 0.15 % (horizontal)

Payloads

Payload flexibility	Yes, with a single USB-C connector
Power supply	by flight batteries (12 W)
Payload protection	Yes, fully integrated into WingtraOne and smooth vertical landing feature
Available Cameras	Sony RX1RII / 35 mm lens, full-frame sensor, 42 MP, RGB Sony QX1 20mm (optional 15 mm Voigtländer lens), APS-C sensor, 20 MP, RGB Micasense Rededge, 5.5 mm, 5 × 1.2 MP, Multi-spectral camera FLIR Duo Pro R640, 13 mm, 0.32 MP (thermal), 12 MP (visible), Thermal camera

Telemetry / Remote Control

Frequency range Telemetry	Country Specific: EU 868–869 MHz, US 902–928 MHz, AUS 915–928 MHz, CN 915–928 MHz
Frequency range Remote Control	All countries 2.404–2.479 GHz
Transmission power (Remote Control)	< 27 dBm, (< 20 dBm)
Specified max. range	40 km (25 mi)
Tested max. range	8 km (5 mi)

* tested and warranted temperature range -10° C to 40° C (14° F to 104° F)

** 2.8 cm/pixel (1.1 in/pixel), WingtraOne QX1 + 15 mm

*** max. reconstructable area, 2500 m (8200 ft) flight altitude, WingtraOne QX1 + 15 mm

**** For WingtraOne RX1RII. For WingtraOne QX1 1.4 cm/px (0.6 in/px)

Technical Specifications Telemetry

WingtraOne Telemetry 868 MHz (EU)

Module Name	WingtraOne Telemetry 868
Serial Number	WOT.868.v00
Main Function	Telemetry connection for remote operation
Frequency range	868–869 MHz
Frequency Tolerance	< 0.1 ppm
Occupied Bandwidth	25 kHz
Transmitting Power	< 27 dBm
Spurious Emission Limits	< -30 dBm (not fully tested)
Operation Mode	FHSS (Frequency Hopping Spread Spectrum)
Modulation Mode	GFSK (Gaussian Frequency Shift Keying)
Typical max. range	1.5–8 km (0.9–5 mi)
Typical Bandwidth	128 kb/s

WingtraOne Telemetry 900 MHz (US)

Module Name	WingtraOne Telemetry 900
Serial Number	WOT.900.v02
Main Function	Telemetry connection for remote operation
Frequency range	902–928 MHz
Frequency Tolerance	< 0.1 ppm
Occupied Bandwidth	500 kHz
Transmitting Power	< 27 dBm
Spurious Emission Limits	< -30 dBm (not fully tested)
Operation Mode	FHSS (Frequency Hopping Spread Spectrum)
Modulation Mode	GFSK (Gaussian Frequency Shift Keying)
Typical max. range	1.5–8 km (0.9–5 mi)
Typical Bandwidth	128 kb/s

WingtraOne Telemetry 915 MHz (world)

Module Name	WingtraOne Telemetry 900
Serial Number	WOT.900.v15
Main Function	Telemetry connection for remote operation
Frequency range	915–928 MHz
Frequency Tolerance	< 0.1 ppm
Occupied Bandwidth	325 kHz
Transmitting Power	< 27 dBm
Spurious Emission Limits	< -30 dBm (not fully tested)
Operation Mode	FHSS (Frequency Hopping Spread Spectrum)
Modulation Mode	GFSK (Gaussian Frequency Shift Keying)
Typical max. range	1.5–8 km (0.9–5 mi)
Typical Bandwidth	128 kb/s

Technical Specifications Remote Control

WingtraOne Remote Control

Module Name	FRSky Taranis
Serial Number	Horus X16D
Main Function	Remote Control for manual control of WingtraOne
Frequency range	2404–2479 MHz
Frequency Tolerance	< 0.1 ppm
Channel separation	0.300 MHz
Number of used channels	47
Transmitting Power	< 20 dBm
Spurious Emission Limits	< 40 dBuV/m
Operation Mode	FHSS (Frequency Hopping Spread Spectrum)
Modulation Mode	2-FSK (Frequency Shift Keying)
Typical max. range	1.5–8 km (0.9–5 mi)
FCC-ID	XYFX91216DK

Technical Specifications Battery

Product details

Modul Name	Wingtra Battery 2
Trade Name	Lithium-ion-battery
Model Number	10.00342.02
Battery capacity	99 Wh (a pair of batteries required)
Battery type	Li-ion, Smart battery technology, UN compliant
State of Charge Indicator	Integrated 5 level SoC indicator
Smart Charging	Auto cell balancing

Technical Specification

Rated Energy Content	99 Wh
Nominal Voltage	14.4 V
Rated Charge	7.5 A, 16.8 V cutoff
Rated Discharge	35 A, 12 V cutoff
Cell type	Samsung_INR_18650_25R
Configuration	4s 3p configuration
Charging Time	1 h
Max Continuous Discharge	35 A
Battery Dimension	80 × 60 × 75 mm
Battery Weight	604 g
Operating Temperature	0°C to 75° C (discharge)
Storage temperature (90 % capacity recovery)	0°C to 725° C
Shock protection	yes
Overvoltage Protection	yes
Undervoltage Protection	yes
Temperture Protection	yes
Short circuit protection	yes