

Marlyn Specification Sheet

The go-anywhere mapping solution, made by surveyors for surveyors

Metric

Hardware

Drone type	Hybrid (VTOL & fixed-wing)
Weight without payload	5.7 kg (incl. batteries)
Max payload weight	Up to 1 kg
Wingspan	1.6 m (detachable wings)
Motors	4 electric motors
Radio link range	Default 3 km LOS (up to 20 km possible) frequency & range customizable
Camera options	RGB (Sony RX1RII, UMC-R10C) Thermal (FLIR Duo Pro R) check our camera specsheet for details Multispectral (MicaSense-MX, Altum)
Included accessories	Backpack, battery charger, remote control, MarLynk modem & maintenance kit
Materials	Carbon fiber frame surrounded with durable structural EPP

Software

Flight planning software	MarLynk (in-house developed) included
Operating system	Windows
Image processing software	Compatible with Pix4D, Agisoft, SimActive and more optional
Input files	.KML, .KMZ, .GeoTIFF, .MBTiles, .WMTS
Updates	Free

Operation

Take-off & landing area	2 x 2 m required
Set-up time	5 minutes
Autonomous flight	Yes
Take-off & landing	Automatic
Emergency procedures	Automatic (configurable)
Cruise speed	45 - 95 km/h
Wind resistance	Take off: 45 km/h Cruise: 55 km/h Landing: 45 km/h
Max flight time *	50 mins
Pre-flight checklist	Yes (integrated in MarLynk)
Temperature range	-10°C - 40°C
GCPs	Not required with optional PPK module

Results

Please check our [camera specification sheet](#)

* Specifications depend upon environmental conditions

RGB Camera Specification Sheet

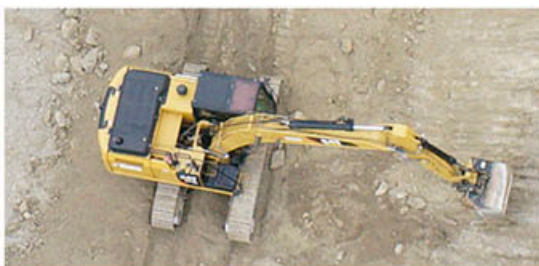
The best sensors for every mapping application

Metric

SONY RX1RII



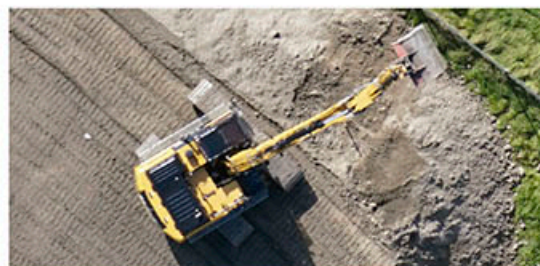
Take advantage of the ultra-high resolution of the 42.4 MP full-frame sensor to achieve GSD and accuracy down to 1 cm! Map 200 ha in one flight with a GSD of 1.6 cm.



SONY UMC-R10C



The industry workhorse and proven payload for many professional users. Map 250 ha in one flight with a GSD of 3 cm.



Details

	Full Frame	APS-C
Sensor layout	Full Frame	APS-C
Spectral bands	RGB	RGB
Sensor size	35.9 x 24 mm	23.2 x 15.4 mm
Pixel pitch	4.51 μm	4.25 μm
Pixel count	42.4 MP	20.1MP
Shutter type	Leaf shutter	Focal plane
Pixels array	7952 x 5304 px	5456 x 3632 px
Weight	505 g (incl. battery & SD card)	285 g (incl. battery & SD card)
Focal length of lens	35 mm	20 mm
Trigger frequency	1.2 Hz at full resolution	1.0 Hz at full resolution

Results

Lowest achievable GSD	0.85 cm/px	1.2 cm/px
Flight altitude	66 m	57 m
Frontal overlap	70 %	67 %
Max coverage	106 ha	103 ha
GSD at 1.5 cm/px	1.5 cm/px	1.5 cm/px
Flight altitude	117 m	71 m
Frontal overlap	83 %	75 %
Max coverage	187 ha	129 ha

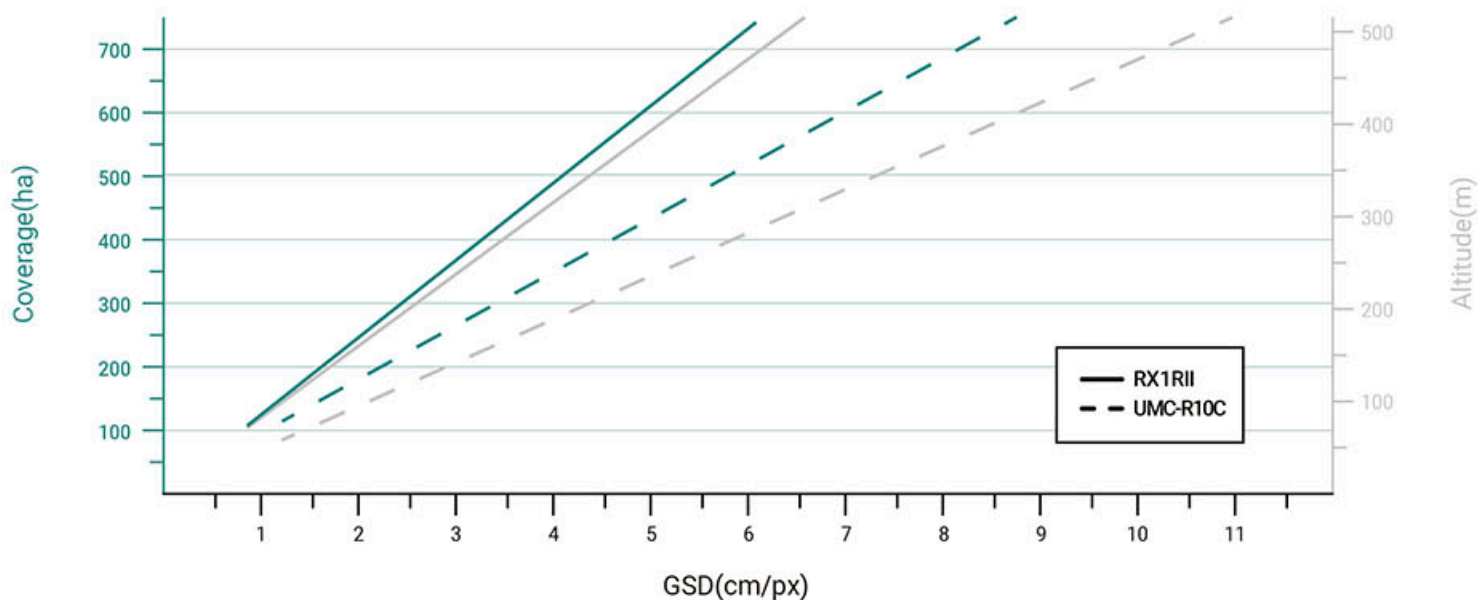
GSD at 2 cm/px	2 cm/px	2 cm/px
Flight altitude	156 m	95 m
Frontal overlap	87 %	81 %
Max coverage	250 ha	172 ha

GSD at 2.5 cm/px	2.5 cm/px	2.5 cm/px
Flight altitude	194 m	118 m
Frontal overlap	90 %	85 %
Max coverage	312 ha	215 ha

Flight altitude at 100 m	100 m	100 m
GSD	1.3 cm/px	2.1 cm/px
Frontal overlap	80 %	82 %
Max coverage	162 ha	183 ha

Flight altitude at 120 m	120 m	120 m
GSD	1.5 cm/px	2.6 cm/px
Frontal overlap	80 %	85 %
Max coverage	194 ha	219 ha

Flight altitude at 500 m	500 m	500 m
GSD	6.4 cm/px	10.6 cm/px
Frontal overlap	96 %	96 %
Max coverage	808 ha	914 ha



Results depend upon environmental conditions
Side overlap of 60% is used for calculating results

Multispectral Camera Specification Sheet

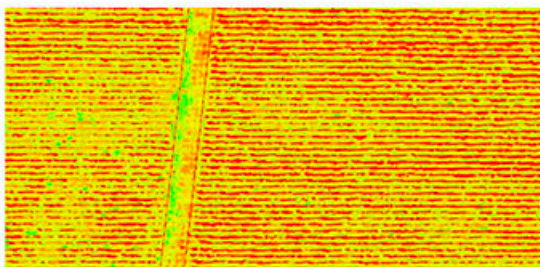
The best sensors for every agricultural application

Metrc

RedEdge-MX



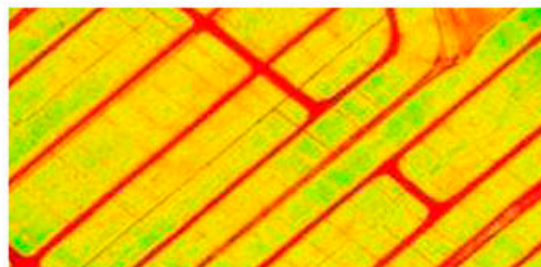
A great solution for multispectral imagery. Generate plant health indices and RGB images in a single flight!



Altum



The revolutionary 3 in 1 camera empowers professional users to capture advanced thermal, multispectral and RGB imagery at the same time.



Details

Sensor layout

5 individual sensors

Spectral bands

RGB, Red Edge, Near-IR

Sensor size

4.8 x 3.6 mm

Pixel pitch

3.75 μ m

Pixel count

5 x 1.2 MP

Pixels array

1280 x 960 px

Shutter type

Global shutter

Weight

232 g (incl. SD card)

Focal length of lens

5.4 mm

Trigger frequency at full resolution

1 Hz

Multispectral

5 individual sensors

RGB, Red Edge, Near-IR

7.16 x 5.35 mm

4.25 μ m

5 x 3.2 MP

2064 x 1544 px

Global shutter

406.5 g (incl. SD card)

8 mm

1 Hz

Thermal

FLIR LWIR

8-14 μ m

1.9 x 1.43 mm

160 x 120 px

160 x 120 px

Results

Lowest achievable GSD

6 cm/px

3.7 cm/px

57.3 cm/px

Flight altitude

86 m

85 m

Frontal overlap

70%

70%

Max coverage

121 ha

120 ha

GSD at 7 cm/px

7 cm/px

7 cm/px

109 cm/px

Flight altitude

101 m

162 m

Frontal overlap

75%

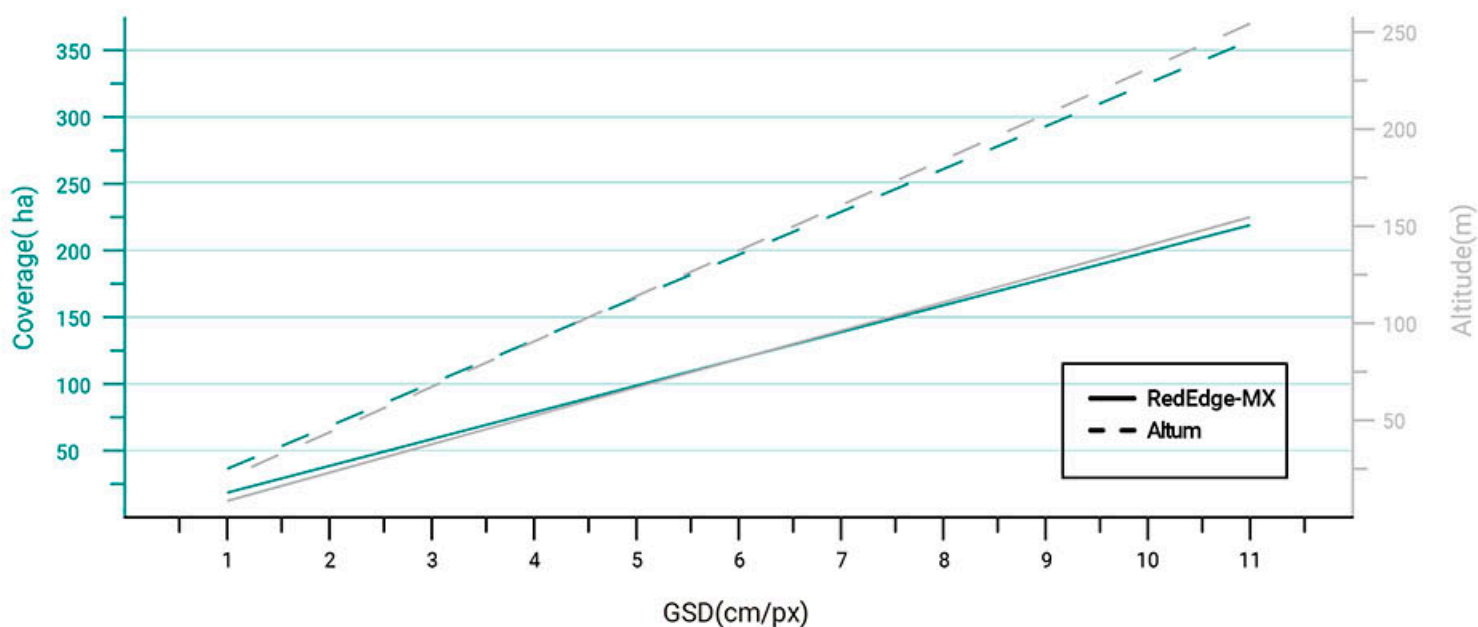
84%

Max coverage

141 ha

228 ha

GSD at 8 cm/px		8 cm/px	8 cm/px	124 cm/px
Flight altitude		115 m		185 m
Frontal overlap		78%		86%
Max coverage		161 ha		260 ha
GSD at 9 cm/px		9 cm/px	9 cm/px	140 cm/px
Flight altitude		130 m		208 m
Frontal overlap		80%		88%
Max coverage		181 ha		293 ha
Flight altitude at 100 m		100 m	100 m	
GSD		7 cm/px	4.3 cm/px	67 cm/px
Frontal overlap		75%		75%
Max coverage		140 ha		141 ha
Flight altitude at 120 m		120 m	120 m	
GSD		8.3 cm/px	5.2 cm/px	81 cm/px
Frontal overlap		79%		79%
Max coverage		168 ha		169 ha
Flight altitude at 500 m		500 m	500 m	
GSD		34.7 cm/px	21.7 cm/px	337 cm/px
Frontal overlap		95%		95%
Max coverage		700 ha		705 ha



Results depend upon environmental conditions

PPK Accuracy

Reduce time and costs with a PPK-enabled Marlyn!

Why PPK



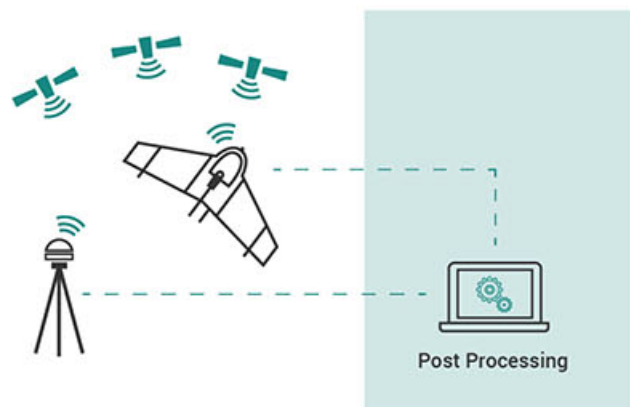
Capturing high-resolution images with ultra-precise geotagging is crucial when converting aerial imagery into accurate point clouds.

When looking at the different options to increase the geotagging accuracy, Ground Control Points (GCPs) is the least effective method as it requires a lot of time in the field and more complex post-processing which results in higher costs in the end. Using GPS correctional technology, the data is improved drastically by achieving ultra-precise geotagging as the aircraft's satellite positioning is fully augmented with supportive base station/VRS information.

The two most common methods of GPS correction technology are Real Time Kinematic (RTK) and Post Processing Kinematic (PPK).

How does it work?

A Global Navigation Satellite System (GNSS) is a constellation of satellites providing signals from space that transmit positioning and timing data to the GNSS receiver (PPK module). Each satellite constantly sends its position and the time to the receiver. The receiver then uses this data, correlated from multiple satellites, to precisely determine its location.

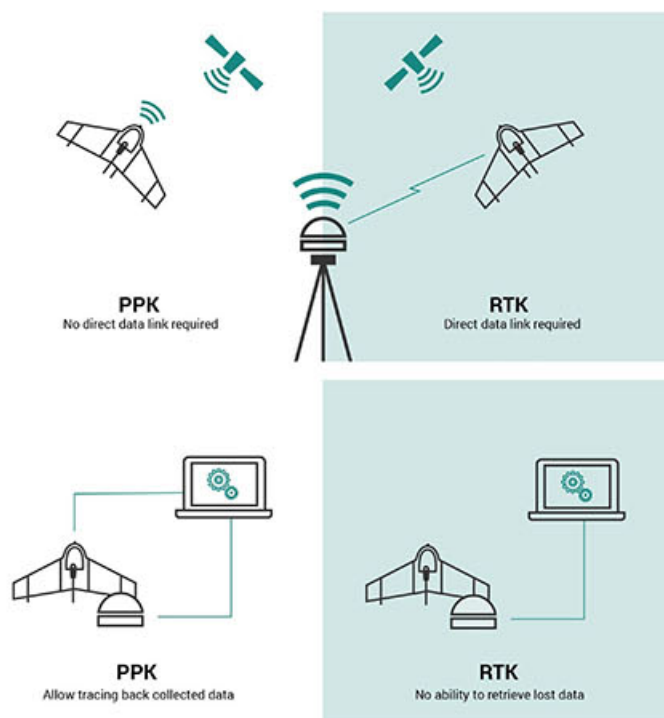


PPK vs RTK

RTK (Real Time Kinematic) relies on GNSS positioning and a stable radio link between a base station on the ground and a GPS antenna on board the drone. Due to these requirements, RTK positioning can have its downsides, with radio link outages and GNSS signal blocks. Due to the long distances between the drone and the base station, signals can be obstructed resulting in loss of correction data and a lower percentage of accurate camera positions in the flight.

PPK, on the other hand, processes the positioning information after the flight, not during. Data is logged in the aircraft and combined with data from the base station when the flight is completed. As a result, there is no risk of data or initialization loss due to radio link disruptions. PPK drones therefore offer more flexibility in terms of how and where the drone is deployed.

Regarding the processing of the captured data, both technologies are similar, however PPK is more thorough as it traces back and forth through the data multiple times to give more comprehensive results.





AsteRx-m2a UAS

- Multi-constellation, multi-frequency all-in-view satellite tracking
- Centimeter-level (RTK) position accuracy with or without a real-time datalink
- Heading output for orientation or INS integrations
- AIM+ anti-jamming and monitoring system
- Camera shutter synchronisation

Position Accuracy		Horizontal	Vertical
Standalone		1.2 m	1.9 m
SBAS		0.6 m	0.8 m
DGNSS		0.4 m	0.7 m
RTK Accuracy			
Horizontal accuracy		0.6 cm + 0.5 ppm	
Vertical accuracy		1 cm + 1 ppm	
Initialisation		7s	
GNSS Attitude Accuracy		Heading	Pitch/ Roll
Antenna separation 1m		0.15°	0.25°
Antenna separation 5m		0.03°	0.05°
Velocity Accuracy		0.03 m/s	
Maximum update rate			
Position		100 Hz	
Position and attitude		50 Hz	
Measurements only		100 Hz	
Latency		<10 ms	
Time precicion			
xPPS Out		5 ns	
Event accuracy		<20 ns	
Time to first fix			
Cold start		< 45 s	
Warm start		< 20 s	
Re-acquisition		avg 1 s	
Tracking performance			
Tracking		20 dB-Hz	
Acquisition		33 dB-Hz	

Dual Smart Battery System

A system you can trust

Metric

The necessity of a smart system

The battery system is the surveying drones' most common source of failure.

It also has a direct influence on the flight performance. To further increase the operational efficiency and reliability of Marlyn, Atmos' engineering team designed a dual smart battery system that results in redundancy, peace-of-mind, and durability.



Benefits



Redundancy

- Each battery acts as a failsafe to the other to maximize reliability ensuring safe operation without any disruptions.
- The two batteries are used in parallel to create one integrated power system.
- Marlyn's smart power board can recognize any unexpected inconsistencies and initiate its predefined safety routine to land automatically.



Peace of Mind

- Battery Management System (BMS) for optimal flight performance.
- Both batteries are closely monitored in terms of remaining energy capacity, voltage, and temperature.
- Complying with airline carry-on luggage regulations making it easy to transport from one job to another



Durability

- After 300 charges, you still have 80-90% capacity remaining.
- Ruggedized connectors and pulling straps to eliminate potential failure points in order to increase safety and ease of use.

Details

Type of battery	Lithium-polymer battery	1 set (2 batteries) needed for flight
Battery capacity	4500 mAh (99.9 Wh)	9000 mAh per battery set
Weight	670 g per battery	
Size (LxHxW)	220 x 55 x 57 mm	
Charging Time	30 - 60 min	60 min per battery set, when completely discharged



ATMOS UAV



Soluciones Topográficas

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