

# DELTAQUAD PRO #MAP

- ✓ Survey up to 1200Ha in a single flight
- ✓ Live video of mapping sensor
- ✓ Thermal, multispectral and RGB sensors
- ✓ No pre-flight calibrations required



## Sensor options



### RGB

Sony camera options



### Multispectral

MicaSense / Agrowing



### Thermal sensor

Flir sensor

**Smart UAV technology** for professionals in the mapping and surveying industry.

The DeltaQuad offers state-of-the-art features for easy and productive mapping at a competitive level of investment and operational costs.

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# Building smart UAV technology

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## About DeltaQuad

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### Practical. Innovative. Customer driven.

At DeltaQuad we specialize in the development, design and production of electric long range UAVs for mapping, inspection and surveillance. All our UAV models are designed and manufactured in the Netherlands.

Our “Smart UAV Technology” approach is on finding solutions that matter from a technological perspective as well as from an economic perspective. We are determined to bring you the best possible solution by combining innovative technologies from the market and use them as building blocks for our UAV solutions. Using this approach we have developed a product portfolio that enables you to find the best solution for your business case.

The primary focus of every individual in our organization is on you, our customer. You, as a decision maker, interested in performance and total costs of ownership. You, as an operator, interested in ease of use, high quality footage and post-processing, good education and uninterrupted flight time. If there are questions, we provide you with short communication lines and clear answers: our customer support agents are skilled and trained to listen, and to provide you with the support needed to make your project successful!

We are eager to keep our leading position in practical innovation. Our primary focus is as always on improving performance, ease of use and scope of deployment. We are working on several projects to further improve flight times and payload capacity, on higher wind resistance and integration of new state-of-the-art sensor technology.



Sander Smeets - CTO

# Mapping drone with unique capabilities

## DeltaQuad Pro #MAP

### Key features

#### Mapping up to 1200ha in a single flight

The DeltaQuad Pro #MAP is the only commercialgrade Fixed Wing VTOL UAV that offers a 61 Megapixel full-frame mapping sensor together with a flight time of up to 110 minutes, adding up to an unsurpassed coverage of up to 1200HA (3000AC) at 3CM per pixel in a single flight.

#### Airborn within 2 minutes

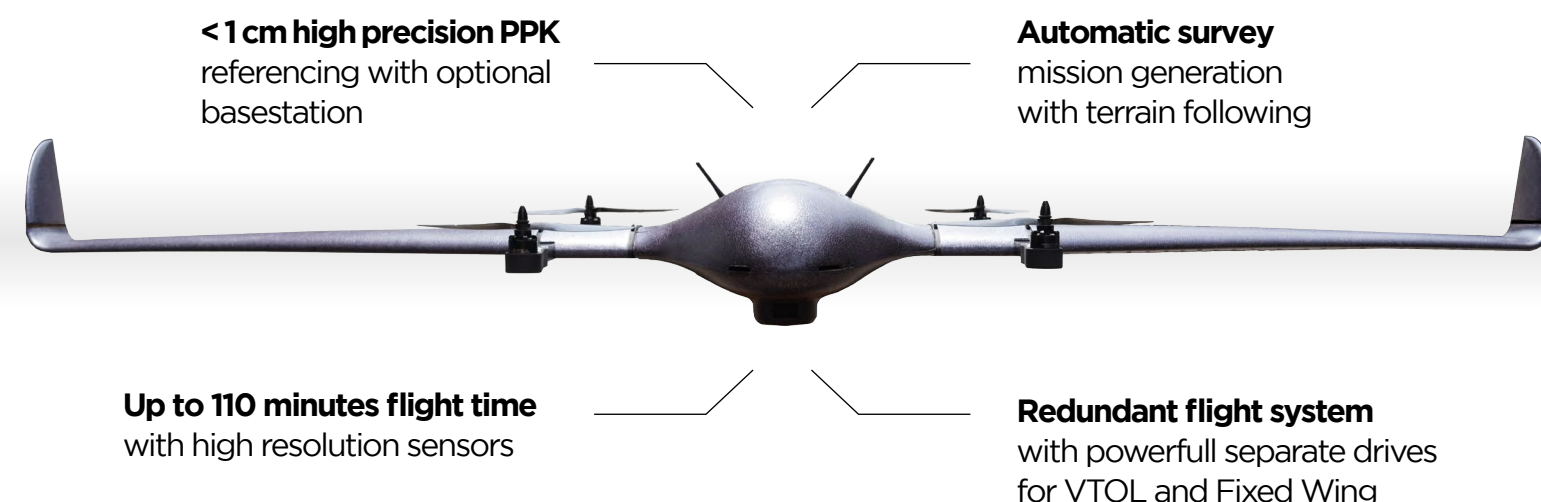
The unique design of the DeltaQuad does not require any lengthy pre-flight calibrations. Combined with the 1 minute tool-less field assembly, this allows the DeltaQuad to be airborne in as little as 2 minutes.

#### Corridor scans with transmission ranges up to 50km

Using the latest innovations in transmission technology, the DeltaQuad Pro #MAP is the only platform that can offer up to 50KM video and control range from a hand-held remote controller.

#### In-flight quality assessment through live video mapping

The DeltaQuad Pro #MAP equipped with the DeltaQuad Controller is the only VTOL mapping platform that provides live video from the mapping camera. This allows instant quality assurance.



# Specifications

## Explore the capabilities



### Platform

Country of origin	The Netherlands
Platform type	Redundant VTOL
Cruise speed	16m/s
Max. flight time	110 minutes
Max. flight distance	100KM
Payload capacity	Up to 1,2KG
Radio range	20KM, 30KM, 50KM or Unlimited
Zero pre-flight calibrations	✓
Swappable payloads	✓
Fully electric	✓

### Mapping performance

Coverage at 3CM/PX	Up to 1200HA (3000AC)
PPK Precision	Sub 1CM (Multiband L1/L2)
Resolution	Up to 61 Megapixel
Corridor length	Up to 50KM
Lowest GSD	0.4 CM/PX

### Weather conditions

Maximum Wind	50KM/H
Max. altitude above sea level	4000m
Temperature range	-20 to 45 C
Weather conditions	Normal, light rain, light snow



# A day in the field

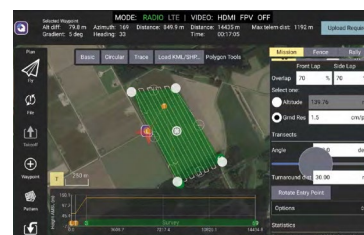
## An operators perspective

Every step in the process of mapping with the DeltaQuad has been carefully thought through with the UAV pilot in mind. In this chapter we aim to give an idea of what it is like to take the DeltaQuad out to the field for a mapping mission.



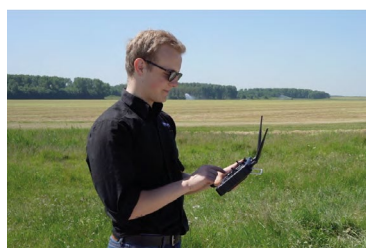
### 1. Tool-less field assembly

The UAV is assembled - on site - in 60 seconds, without the need for additional tools.



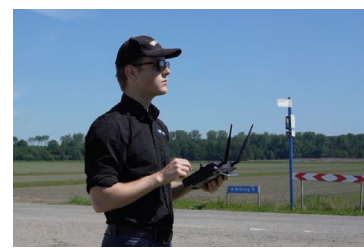
### 2. Plan mission on-site

Using the smart mission planning software on the integrated DeltaQuad Controller, missions can be planned on site, or in advance from the comfort of your own computer. Planning missions is easy with automatic terrain following, generated survey paths and smart mission plan validation.



### 3. Swipe to start

The DeltaQuad performs the mission fully autonomous from takeoff to landing.



### 4. Monitor your mission

The vehicle's position and mission progress is displayed on a satellite map. You are instantly alerted when other air traffic approaches. With live video of the mapping sensor you can monitor the quality of your mapping results in real time. At any point the pilot can take manual control of the vehicle, or command it to return home or land.



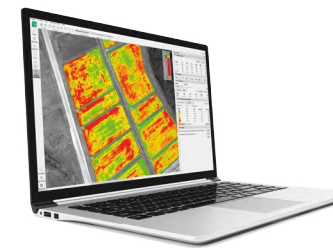
### 5. Back to base

When the mission is complete the UAV automatically returns to base, and lands vertically at the indicated location. It can do this fully automated, and if needed, guided with simple joysticks from the pilot.



### 6. Pack it up

Packing the DeltaQuad is as easy as the assembly; a pilot will need about 60 seconds to successfully pack the UAV.



### 7. Post processing

Post processing data is as easy as flying the UAV with smart software tools. Using wifi to download the highly accurate PPK positioning data, and a simple tool to georeference your images, the data is ready for advanced processing and analysis in applications such as Pix4D or Agisoft in minutes.

## E-Course

The e-Course is an online course that enables anyone to become a DeltaQuad operator. In this course you will explore the controls & software you need to understand to fly the DeltaQuad Pro.

### We will teach you - amongst other things - how to:

- ✓ Assemble the UAV
- ✓ Operate the UAV: plan a mission, take-off and land autonomously
- ✓ Fly manually with the DeltaQuad controller
- ✓ Work with flight safety protocols
- ✓ Maintain the vehicle properly

# Configuring the #MAP

## Choosing a mapping configuration



### DeltaQuad PRO platform

The DeltaQuad Pro platform is a versatile, high performance UAV solution. Using swappable payloads it allows you to configure multiple different set-ups for RGB, multispectral or thermal purposes.

#### Including:

- ✓ 1 license for the DQ training program
- ✓ 1 year warranty
- ✓ lifetime software upgrades

Customize your DeltaQuad Pro #MAP platform with your choice of sensors and options.



#1

#### Mapping payload

Choose your sensors



#2

#### Transmission system

Choose your range



#3

#### PPK & Base station

Choose your precision



#4

#### Image processing

Choose your software

## #1 Mapping payload

### RGB Camera options



**RGB cameras**  
Sony

We offer high-end RGB cameras for high resolution mapping. Our Sony sensors are up to 61MP and are ready for the most demanding tasks. Choosing the right RGB camera solution depends on a number of different factors,

#### Including:

- Desired resolution
- Desired flight altitude
- Desired coverage
- Budget

#### Map output

- Orthomosaics
- 3D models
- Point Clouds
- DSM
- Contour lines
- More options

### Sony A7R mark IV

The Sony A7R mark IV combined with the Sonnar T 35mm lens offers 61MP resolution, fast shutter speeds and a high dynamic range. The speed of this system allows for < 1 CM/pixel resolution and this makes it our recommended mapping sensor.

- 61 megapixel 9504 x 6336
- Full frame sensor (35.9mm x 24mm)
- 35 mm Focal Length
- Up to 1200HA (3000ac) at 3cm/px

### Sony A7R mark III

The Sony A7R mark III combined with the Sonnar T 35mm lens offers 42MP resolution, fast shutter speeds and a high dynamic range. The speed of this system allows for < 1 CM/pixel resolution.

- 41 megapixel 7952 x 6336
- Full frame sensor (35.9mm x 24mm)
- 35 mm Focal Length
- Up to 1000HA (2500ac) at 3cm/px

### Sony RX1R mark II

The Sony Cybershot DSC-RX1R mark II camera combined with the Carl Zeiss 35mm lens offers 42MP full frame sensor.

- 42 megapixel 7952 x 5304
- Full frame sensor (35.9mm x 24 mm)
- 35 mm Focal Length
- Up to 1000HA (2500ac) at 3cm/px

### Sony A6000

The Sony A6000 Sonar Lens 24MP sensor with 35mm lens provides an affordable, high resolution mapping sensor.

- 24 megapixel 6000 x 4000
- APS-C (23.5mm x 15.6mm)
- 35 mm Focal Length
- Up to 750HA (1800ac) at 3cm/px

# #1 Mapping payload

## Multispectral sensors

Multispectral sensors provide spectral and spatial resolution for aerial mapping applications. The MicaSense solution is available as the RedEdge MX offering 5 bands, and as the Altum that includes the Thermal band. Next to this we offer the Agrowing solution a high resolution multispectral and RGB mapping sensor.



RGB & Multispectral

### Agrowing A7R-IV QUAD

High resolution multispectral and RGB mapping sensor that comes with the Agrowing QUAD multispectral lens for 12MP multispectral imagery, and the 35mm Zeiss lens for 61MP RGB mapping.

- 10 narrow bands of 20-30nm wide
- 12 megapixel per band or 61MP RGB
- Connect seamlessly with the PPK & Sub CM PPK referencing



### Micasense Rededge P

Premium multispectral sensor. Designed for research and services requiring high spatial resolution and a fast capture rate to maximize flight time.

- Blue, Green, Red, Red edge, and Near-infrared
- Generates plant health indexes and RGB (color) images from one flight
- Embedded GPS for direct geo-referencing



### Micasense Altum PT

Best-in-class multispectral sensor with synchronized thermal. Built for both high-end research and assessing water stress and irrigation systems in production agriculture.

- Blue, Green, Red, Red edge, and Near-infrared, LWIR
- Generates plant health indexes and RGB images from one flight
- Embedded GPS for direct geo-referencing



### Micasense Rededge MX

This professional multispectral sensor kit captures 5 narrow spectral bands to analyze crop health.

- Blue, Green, Red, Red edge, and Near-infrared
- Generates plant health indexes and RGB images from one flight
- Embedded GPS for direct geo-referencing



Multispectral  
MicaSense /  
Agrowing

#### Map output

- Index Map (NDVI)
- Chlorophyll map
- NDRE, OSAVI, NIR, CIR
- DSM
- Weeds 1/2
- RGB

# #1 Mapping payload

## Thermal sensor

Thermal sensors capture differences in radiant energy to show the relative temperature of objects (in comparison to one another).



### Flir Duo PRO R

The Flir Duo Pro R records 4K RGB and 640x512 Radiometric Thermal video or images with Geo-coordinates. This sensor is fully integrated with the DeltaQuad and can be remotely viewed and controlled using the DeltaQuad Controller. The included Flir app allows you to configure button actions, set up your camera modes, and calibrate your thermal sensor.

Compared to the multispectral options, the Flir Duo Pro offers a much higher thermal resolution. With live video feeds this sensor provides an excellent basis for both thermal mapping and thermal inspections.

- Internal IMU and dedicated GPS
- 4K RGB video or interval images
- 640 x 512 Thermal (IR) video or interval images
- Thermal analysis suite



Thermal sensor  
Flir Sensor

#### Map output

- Inspection of:
- Pipeline
  - Powerline
  - Irrigation
  - Solar panel
- Monitoring:
- Wildlife
- Mapping:
- Wildfire

Partners of  
DeltaQuad:



DELTAQUAD

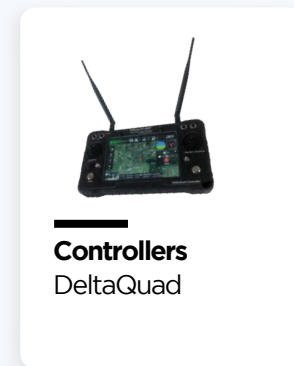


DELTAQUAD



## #2 Transmission system Command & Control

Transmission systems allow you to plan missions and to connect with the UAV whilst in-air. Choosing the controller not only decides how you control the UAV, it also unlocks a number of features not found on the tablet.



### DeltaQuad controller (up to 30km range)

The DeltaQuad Controller is an easy-to-use hand-held remote control solution that can stream HD video over long distances.

- Control range up to 30KM via radio & unlimited range via LTE
- Instantly monitor mapping data through a live video feed
- Live dual camera switching for enhanced safety and situational awareness
- Instant switching between Radio and LTE communications
- Touch-screen mission planning and flight control
- Autonomous control or manual joystick control
- Encrypted 2.4Ghz ISM band, worldwide license-free operation
- CE, FCC certified & IP67 all weather operation
- Command & Control sharing on remote devices via WiFi or LTE

The DeltaQuad booster package will increase the operational range of the DeltaQuad Controller up to 50KM.

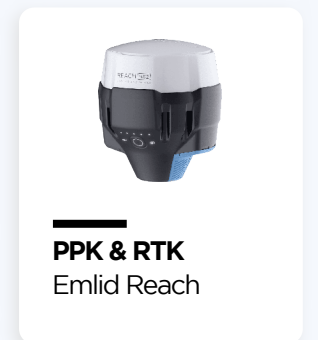


### Android ground control station (up to 20km range)

The omnidirectional 900Mhz digital radio offers up to 20KM telemetry range. This includes a 10 inch Android tablet for pilot operation. This system does not stream live video.

## #3 PPK & RTK solutions Precise positioning

Differential GPS for centimeter or sub centimeter level accuracy for your mapping data. The range of Emlid Reach PPK systems provides an easy to use solution for absolute accuracy in your mapping results. The base stations can also operate in RTK mode using NTRIP.



### Emlid Reach RS2 PPK kit

The Reach RS2 Post Processing Kinematics (PPK) kit offers both a ground and air unit to offer sub-centimeter level accuracy for your images.

- Connects to 3.5G modem
- GPS/QZSS L1C/A, L2C, GLONASS L1OF, L2OF, BeiDou B1I, B2I, Galileo E1-B/C, E5b
- 184 channel tracking L1/L2



### Emlid Reach RS+ PPK kit

The Reach RS+ Post Processing Kinematics (PPK) kit offers both a ground and air unit to offer centimeter level accuracy for your images.

- GPS/QZSS L1, GLONASS G1, BeiDou B1, Galileo E1, SBAS
- 72 channel tracking

## #4 Image processing Stitching software

After gathering the data from your mapping UAV there are several options to convert this data into actionable intelligence. Depending on your use case there are several software solutions with a range of unique features.

DeltaQuad has partnered with Pix4D as a market leader in image post processing to provide the most elaborate tools for a variety of solutions. The images from your DeltaQuad Pro #MAP are geo-referenced in such a way that virtually every image post processing software can process them.

### Pix4D Mapper

Pix4D Mapper helps power mapping applications across industries and is the leading photogrammetry software for professional drone mapping.

- Desktop application with floating license (1 device)
- Unlimited desktop processing
- Personal Pix4D support and updates the first year

When using Pix4D and the 61MP camera on the DeltaQuad, it is necessary to use a large frame add-on.



Partner of  
DeltaQuad

## Overview

### Add-ons for the DeltaQuad PRO #MAP

#### Platform add-ons

**Batteries 23Ah High grade LiPo**

**DeltaQuad rugged flight case**

**Spare balanced propeller set**

**ADS-B mode S receiver**

#### Controller add-ons

**Booster package (50KM control range)**

**Remote viewing terminal**

#### Warranty & high availability options

**Second year warranty**

**Spare UAV with flight case**

#### Certified pilot training

**Single certified pilot training**

**Every additional training license**



**Let's explore your project together**  
Schedule a meeting

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